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KIM MARSHALL
MANAGER EXAMINATION SUPPORT AND
SALES



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AUSTRALIA

Patents Act 1990

CSL LIMITED

PROVISIONAL SPECIFICATION

Invention Title:

P. gingivalis sequences

The invention is described in the following statement:

P. gingivalis sequences

FIELD OF THE INVENTION

5 The present invention relates to *P. gingivalis* nucleotide sequences, *P. gingivalis* polypeptides and probes for detection of *P. gingivalis*.

BACKGROUND OF THE INVENTION

10 Periodontal diseases are bacterial-associated inflammatory diseases of the supporting tissues of the teeth and range from the relatively mild form of gingivitis, the non-specific, reversible inflammation of gingival tissue to the more aggressive forms of periodontitis which are characterised by the destruction of the tooth's supporting structures. Periodontitis is associated
15 with a subgingival infection of a consortium of specific Gram-negative bacteria that leads to the destruction of the periodontium and is a major public health problem. One bacterium that has attracted considerable interest is *P. gingivalis* as the recovery of this microorganism from adult periodontitis lesions can be up to 50% of the subgingival anaerobically
20 cultivable flora, whereas *P. gingivalis* is rarely recovered, and then in low numbers, from healthy sites. A proportional increase in the level of *P. gingivalis* in subgingival plaque has been associated with an increased severity of periodontitis and eradication of the microorganism from the cultivable subgingival microbial population is accompanied by resolution of
25 the disease. The progression of periodontitis lesions in non-human primates has been demonstrated with the subgingival implantation of *P. gingivalis*. These findings in both animals and humans suggest a major role for *P. gingivalis* in the development of adult periodontitis.

P. gingivalis is a black-pigmented, anaerobic, asaccharolytic,
30 proteolytic Gram-negative rod that obtains energy from the metabolism of specific amino acids. The microorganism has an absolute growth requirement for iron, preferentially in the form of haeme or its Fe(III) oxidation product haemin and when grown under conditions of excess haemin is highly virulent in experimental animals. A number of virulence
35 factors have been implicated in the pathogenicity of *P. gingivalis* including the capsule, adhesins, cytotoxins and extracellular hydrolytic enzymes. In

particular, proteases have received a great deal of attention for their ability to degrade a broad range of host proteins including structural proteins and others involved in defence. The proteins that have been shown to be substrates for *P. gingivalis* proteolytic activity include collagen types I and IV, fibronectin, fibrinogen, laminin, complement and plasma clotting cascade proteins, α_1 -antitrypsin, α_2 -macroglobulin, antichymotrypsin, antithrombin III, antiplasmin, cystatin C, IgG and IgA. The major proteolytic activities associated with this organism have been defined by substrate specificity and are "trypsin-like", that is cleavage on the carboxyl side of arginyl and lysyl residues and collagenolytic although other minor activities have been reported.

P. gingivalis trypsin-like proteolytic activity has been shown to degrade complement, generating biologically active C5a, impair the phagocytic and other functions of neutrophils by modifying surface receptors, and abrogate the clotting potential of fibrinogen prolonging plasma clotting time. The trypsin-like proteolytic activity of *P. gingivalis* also generates Fc fragments from human IgG1 stimulating the release of pro-inflammatory cytokines from mononuclear cells and is associated with vascular disruption and enhanced vascular permeation through the activation of the kallikrein-kinin cascade. *P. gingivalis* spontaneous mutants with reduced trypsin-like activity as well as wild-type cells treated with the trypsin-like protease inhibitor N-p-tosyl-L-lysine chloromethyl ketone are avirulent in animal models. Further, it has been shown that *P. gingivalis* grown under controlled, haemin-excess conditions expressed more trypsin-like and less collagenolytic activity and were more virulent in mice relative to cells grown under haemin-limited but otherwise identical conditions. The increased expression of the trypsin-like activity by the more virulent *P. gingivalis* has led to the speculation that the trypsin-like proteolytic activity may be the major determinant for infection or disease.

There has been considerable endeavour to purify and characterise the trypsin-like proteases of *P. gingivalis* from cell-free culture fluids. Chen *et al*, (1992) [J Biol Chem 267:18896-18901] have purified and characterised a 50 kDa arginine-specific, thiol protease from the culture fluid of *P. gingivalis* H66 designated Arg-gingipain. A similar arginine-specific thiol protease has been disclosed in JP 07135973 and the amino acid sequence disclosed in WO 9507286 and in Kirszbaum *et al*, 1995 [Biochem Biophys Res Comm

207:424-431]. Pike *et al* (1994) [J Biol Chem 269:406-411] have characterised a 60 kDa lysine-specific cysteine proteinase from the culture fluid of *P. gingivalis* H66 designated Lys-gingipain and the partial gene sequence for this enzyme was disclosed in WO 9511298 and fully disclosed in
5 WO 9617936.

In order to develop an efficacious and safe vaccine to prevent *P. gingivalis* colonisation it is necessary to identify and produce antigens that are involved in virulence that have utility as immunogens to generate neutralising antibodies. Whilst it is possible to attempt to isolate antigens
10 directly from cultures of *P. gingivalis* this is often difficult. For example as mentioned above, *P. gingivalis* is a strict anaerobe and can be difficult to isolate and grow. It is also known that, for a number of organisms, when cultured *in vitro* that many virulence genes are down regulated and the encoded proteins are no longer expressed. If conventional chemistry
15 techniques were applied to purify vaccine candidates potentially important (protective) molecules may not be identified. With DNA sequencing, as the gene is present (but not transcribed) even when the organism is grown *in vitro* it can be identified, cloned and produced as a recombinant DNA protein. Similarly, a protective antigen or therapeutic target may be
20 transiently expressed by the organism *in vitro* or produced in low levels making the identification of these molecules extremely difficult by conventional methods.

With serological identification of therapeutic targets one is limited to those responses which are detectable using standard methods such as
25 Western Blotting or ELISA. The limitation here is the both the level of response that is generated by the animal or human and determining whether this response is protective, damaging or irrelevant. No such limitation is present with a sequencing approach to the identification of potential therapeutic or prophylactic targets.

30 It is also well known that *P. gingivalis* produces a range of broadly active proteases (University of Melbourne International Patent Application No PCT /AU 96/00673, US Patent Nos 5,475,097 and 5,523,390), which make the identification of intact proteins difficult because of their degradation by these proteases.

SUMMARY OF THE INVENTION

The present inventors have attempted to isolate *P. gingivalis* nucleotide sequences which can be used for recombinant production of *P. gingivalis* polypeptides and to develop nucleotide probes specific for *P. gingivalis*.

In a first aspect the present invention consists in an isolated *P. gingivalis* nucleotide sequence, the nucleotide sequence consisting of or including a sequence selected from the group consisting of SEQ ID NO: 1 to SEQ ID NO. 1284 and sequences complementary thereto.

In a second aspect the present invention consists in an isolated *P. gingivalis* polypeptide, the polypeptide being at least partially encoded by a nucleotide consisting of or including a sequence selected from the group consisting of SEQ ID NO: 1 to SEQ ID NO. 1284 and sequences complementary thereto.

In a third aspect the present invention consists in a nucleotide probe specific for *P. gingivalis*, the probe including a detectable label and a nucleotide sequence of at least 15 nucleotides, the nucleotide sequence being derived from a sequence selected from the group consisting of SEQ ID NO: 1 to SEQ ID NO. 1284 or a sequence complementary thereto.

DETAILED DESCRIPTION

Preparation of the *P. gingivalis* library for sequencing.

To determine the DNA sequence of *P. gingivalis* genomic DNA was isolated from *P. gingivalis* strain W50 (ATCC 53978) essentially by the method described by Mamur J. (1961). Cloning of DNA fragments was performed essentially as described by Fleischmann *et al.*, (1995). Briefly, purified genomic DNA from *P. gingivalis* was nebulized to fragment the DNA and was treated with Bal31 nuclease to create blunt ends then run twice on preparative 1% agarose gels. DNA fragments of 1.6-2.0 kb were excised from the gel and the DNA recovered. This DNA was then ligated to the vector pUC18 (*Sma*I digested and dephosphorylated; Pharmacia) and electrophoresed on a 1% agarose preparative gel. The fragment comprising linear vector plus one insert was excised, purified and this process repeated

to reduce any vector without insert contamination. The recovered vector plus insert DNA was blunt-ended with T4 DNA polymerase, then a final ligation to produce circular DNA was performed. Aliquots of Epicurian Coli Electroporation-Competent Cells (Stratagene) were transformed with the library DNA and plated out on SOB agar antibiotic diffusion plates containing X-gal and incubated at 37°C overnight. Colonies with inserts appeared white and those without inserts (vector alone) appeared blue. Plates were stored at 4°C until the white clones were picked and expanded for the extraction of plasmid DNA for sequencing.

10

DNA sequencing

Plasmid DNA was prepared by picking bacterial colonies into 1.5ml of LB, TB or SOB broth supplemented with 50-100ug/ml Ampicillin in 96 deep well plates. Plasmid DNA was isolated using the QIAprep Spin or QIAprep 96 Turbo miniprep kits (QIAGEN GmbH, Germany). DNA was eluted into a 96 well gridded array and stored at -20C.

15

Sequencing reactions were performed using ABI PRISM Dye Terminator and ABI PRISM BIGDye Terminator Cycle Sequencing Ready Reaction kits with AmpliTaq DNA polymerase FS (PE Applied Biosystems, Foster City, CA) using the M13 Universal forward and reverse sequencing primers. Sequence reactions were conducted on either a Perkin-Elmer GeneAmp 9700 (PE Applied Biosystems) or Hybaid PCR Express (Hybaid, UK) thermal cyclers. Sequencing reactions were analysed on ABI PRISM 377 DNA sequencers (PE Applied Biosystems).

20

The sequences obtained are set out below.

25

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to
5 be considered in all respects as illustrative and not restrictive.

Dated this 31st day of December 1997

CSL LIMITED

Patent Attorneys for the Applicant:
F.B. RICE & CO.

References.

Mamur, J. (1961) A procedure for the isolation of deoxyribonucleic acid from micro-organisms. J. Mol. Biol. 3, 208-218.

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Fleishmann, R.D. et al. (1995) Whole genome random sequencing and assembly of *Haemophilus influenzae* Rd. Science 269, 496-512.

(2) INFORMATION FOR SEQ ID NO:1

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 610 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...610
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1

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gagcataccg cccggccagc gttctaccac atagggcatt cccactgatt ggccaattcg      60
gcgatagggt ctttggcctg cttcttcgtg gcaacgaaag aatcttcttg ccatttttgg      120
ccataccctt aataacttcg gctgcttgtc tacttttagca actgttttgt gcaggtcgat      180
aatatgaata tcgttggctc cataaagata tacggagcca taagccggat tccactttct      240
cttgagtgtc cgaagtgagc accggcttcc aataattgat caaaagaaat tcttacattt      300
tcgtttacgt tctttgtaat gattactgtt tgcaatccaa accgtagagc agactcgaaa      360
agaaatgaat tacccccgaa tgcaatccga tgatttagat actaaacgcg agaaatatcc      420
tctaaggaca ttaacgctta cgaattggaa tctcttgcca gctttgggac gtcccggttt      480
cttacgttct ccacgcgagg atcgcgagtg atgaagcctt ctgaacgcaa agcgggtttt      540
cgtccggatt gatcttgacc agtgcacggg ccgatagcca agcgagcact cgttctgacc      600
tttgaaacca                                     610

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(2) INFORMATION FOR SEQ ID NO:2

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 676 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...676
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2

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agccgaaaat tcttccggtc cgtttagcagc aggaatgtgg caaatcacct gcctgagata      60

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ccctcgcgtt	tgcaacaagt	ccgccggaca	gaacctctcc	cgtaccggat	ctgagcgaca	120
tgattgcaga	agtgggaattg	gcacgcaagt	cctgaccgaa	ctgcaatata	gccgattgga	180
tcttttcaca	tatagcgtac	ggaattggag	ccttttcgac	cggattattc	ctatataaaa	240
ccacagacat	tcagctcatc	gatgggggag	ccttatccga	cagaataatc	atgcggaaaa	300
aatccgcgga	atcgaactca	aaccccgcta	ctggtttttc	agctggagac	aatgctgcag	360
ttctcacaga	actacatttc	cgaaaactgg	taaaaggagg	atcgagcaac	ctgaatatca	420
tgttcggcaa	tctgatcgtc	cccaatatcg	caataagaag	attcgctgga	aaaatgagtt	480
ggaaaacaaa	taagtgtctt	caatgcagcc	aaagacacgg	tcaatcgcta	tcgagtggcg	540
aggatttgct	ccgcctgcgt	tccaacttcg	gotataaggc	tttcaagcgt	ggtactactc	600
tttcgatgcg	gaaatgcgta	cacagctatt	taccaatgag	ctgaaaacag	cctaaaaaag	660
caatctgcat	tcctgc					676

(2) INFORMATION FOR SEQ ID NO:3

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 999 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...999

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3

ggcataataa	atcaatccgc	acttcggaca	cgatttggct	ttcgggtttt	ctccgcaaaa	60
ccatcgtttc	cgcagcgcg	acagtatctg	aaaggtgcag	cggatgctca	gcgtttattt	120
tgctcccat	cccaaagcac	ttgccccagc	acagcggcat	cgtctctttt	gagctgagag	180
aagagcagct	tggtctccct	cggtagatat	tcagcacatt	cttttccatg	tggtggcgga	240
tcggatcatc	agcaggtcac	ctgctttggt	aagaccaccg	aagaggatga	tcgctccgga	300
ctggagaagg	taacgaagtc	ggcaaaagcc	tctccgagga	tggtcccgtg	gtctcgaata	360
tctcttgagc	aaggccatcg	ccactgatag	ctcatcgtaa	acatctttcg	aagtgattag	420
atcgggctga	atgttccgga	gaagctcttg	tccgaacgga	tgtccaggta	ttcgcgagct	480
gtacgggcta	tcctgtagca	gaggtgtaag	tctcgagaca	gccctatctg	ccacaaccga	540
catgcgacca	ttgcggcgaa	cgatcatgtg	tcccagctca	cgggcaaacc	atcgtgtccg	600
tacaccaagc	tgccattgac	tactatgccg	cttccgaccc	cgtaccgagc	gtgataacga	660
tgaagtcctt	catgccacga	gctgctcata	ggtcatctct	ccgatggcag	cagcattggc	720
atcattggtc	agtgtgtggg	gataccta	gaatcgggtg	gcatttgggc	gaaggggtatt	780
tgggctgttt	ccaaggcaaa	ttgggcgcaa	actcgatcga	tccggtataa	tagttccatt	840
gggagcacct	acaccgatac	cctttatctt	ctctttccct	ccacctgttc	aatcaactga	900
ttgatgccgg	cagtcagatc	tttgatataa	tgntcagatc	gttgtgcgct	ccggtcttga	960
tggacgaact	tataaccaa	tgccacgagc	gtccaccac			999

(2) INFORMATION FOR SEQ ID NO:4

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 658 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...658
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4

tgggctacct	gacgataccc	gtacaggcgg	aatacaatat	gctcaaggaa	ggctgaagct	60
gcgcggaggt	ctctatacgt	ccctgctgct	ggagagttct	tccgcgtgat	catcgacggt	120
acgatggctct	atgacgatcc	caagctggaa	cagcgcagat	ggatctgcgc	gaactgaact	180
tctcggacaa	gataaaggag	cggatttcgg	tgtcataata	ggagccgact	attatttcgc	240
gcgacgatag	gtgcgtttgc	cgatgtcaca	ttcggcctga	tccctctgac	gggtcacact	300
tcaaggctat	tccttaccgg	atgtataacg	tcttcgcacg	tatggatttt	cctacagact	360
caattactga	gccactacac	acggatcgcc	tgccgggtctt	cgttggctct	ttcaaaaact	420
atcactcttt	caacacctcg	agcatagtac	aatacaaata	caatggaatc	gataacccaa	480
atatatcgca	cggctacggg	cggagcagta	gccacacgat	tggcccacgt	cgggctgcta	540
gatgnttctc	gatcggaacc	cccggggcgc	ctctttccgt	gttacgctta	cggcaagcct	600
tgcttgccac	gggcaaagga	cacctcacgg	atgcagcatc	ttgccgcttg	gaagcaag	658

(2) INFORMATION FOR SEQ ID NO:5

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 628 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...628
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5

tcttccgctt	tttttggaat	actcattcgc	atcgaaagct	ctacagagct	caaggatgcg	60
gagaggatta	gtttgacacc	cgctcaaagc	tattttgcca	gcgggtgttg	cgctttctgc	120
ttgcagtcca	ataaacctga	tgcccttcgg	gcgtctatct	aagcataaac	gacaaaaaca	180
cattagtcaa	acttttagaa	acattgtatg	aacaaagtgt	ggaaatacgt	gacgggagcc	240
tttgatagc	agccgtcagc	gcagtagcat	cggtggaac	agtggctgct	ttggacctt	300
ccgaggggtg	aattcttcat	aaccgatggg	acggaaaacg	aatcggaatc	aagcagacat	360
cttacacaac	gacatccgga	gccttcgccg	cttgcccaat	ttggtcggag	ctgcagaagc	420
atcggtacac	gccgtagtac	aatcaaagtg	gagtcggagc	agcgaatgga	ctcttcagca	480
gtacttcgat	cgttctgaat	tcttcttcgg	aggcgaatcc	agaaactttc	agcgtcccca	540
acacggcagg	tagtaggcta	cggttcgggg	gtgatcatca	tgcacagagg	atatatcatc	600

acgaataatc atgtagtaaa gggagcca

(2) INFORMATION FOR SEQ ID NO:6

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 970 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...970

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6

gacttcttta	ccccgctaaa	agtaacctta	ctgatgcgag	gacgttcagg	acaatgattt	60
tcagatagac	tttattgccg	acatatattat	cgcgatggtt	cgcacatttg	agaagtagcc	120
ctgacgcata	attctattca	cggcagcgac	atggcatctc	caggaatcag	gacttcatca	180
cctacagcca	agcctgaaga	ttgcgcaaga	caaagtcac	gaaagacctc	attccctcga	240
tctcatagat	gctatgggtc	tatgaatagg	cttggcatag	gatatttcag	ggcttatata	300
tggatctccg	tgaggggtca	gatccgagga	ctgtcctttc	aggtcacctat	gctggcgag	360
aagagagctg	ctacggcaat	aatctttttg	taatagtctt	tctcaaata	ttcaatattt	420
atcttctctg	agagcgattt	gtcgtgtgtc	ttgccgaatc	gacgctccct	cgatgaatat	480
tcttctatgg	tgcccttcaga	cagtcggcat	caaagtccgg	ccaaagcgta	tcggtaaaaa	540
caattccgta	taggccattt	gccacataag	aaaatgctga	tacgcttcct	ccacctgtac	600
gaatgaagag	atccggatcc	ggaatgccc	cggtggaaga	tgatcagaaa	ccaaatcgac	660
atttatatct	tcagggtcca	cacttcatcc	cgaacctttc	gagccaatct	acggatgaca	720
tcgggtcattt	cccaggagaa	ctgtagctaa	gggccaaaac	caaagtcagc	cccgtgtttc	780
cggcgctctc	cgaataacct	tttctaacga	ttcacggaca	tcctcgggga	gccactgaaa	840
tcgccgatag	ccaagaggcg	aatgttattg	gtcatcaagt	ccgcatctca	ttcatgataa	900
gctgtaacga	aaaggcccat	cagcgccctg	attcctcttt	cggacgattc	caattcttcg	960
tactgaaagg						970

(2) INFORMATION FOR SEQ ID NO:7

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 549 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...549

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7

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agaaccagaa gtatcgaacg aaggaaacaa tcaaatgata tcatctccca aagggtttttc    60
aaaccctcga aagaggaaat aatataatcg gtgcagggtt ggaaaggat tccttttctga    120
ccatcaggac gggtgtaaat ccaggttccg tctgtctttt atttcggaag cgggatcatc    180
gcctgccaca taggctttcg gtctattaag ttcggttctc tatgctgact gtgataaaga    240
ttatcggaca aaatagagtt ctatcctcct gtagaatgta taaaggattg ggagacgact    300
aggctgcttt gcaggaatct tttatttacg gaaacaaaat ttcttcggac aacttttgct    360
tcgcattaaa gaattccagc agcgattccg aatatcggca caacgggcaa gtagaaagtt    420
tttgcaaaat attctacttc caagggcgta atcggtttcc atattatctc tcaaaaggtc    480
tctcaagccc cgaaagagga aataatataa tcggtgtagg agttgggaaa ggtattcctt    540
ctgaccatc                                     549

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(2) INFORMATION FOR SEQ ID NO:8

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 576 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...576

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8

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agccgcacga ttggaaaaga aactggagca actcacagcc taacggcgca gagcctgtgc    60
ttgagacgct gcagaagacc gggatgattc tccggatccc tgaggatcaat gtctgggaaa    120
gattcttttc ggatacgatc agtagcagtc tcccacttgc aagtgcatac gccctttcgg    180
tacacgataa gccctccctc ttcgtaccag gatgacaagc tcttcatcac gaagagaaaag    240
attcacagca gatcgccatg ggacagcatg gaagcatcca ccactctctc ctccacttgg    300
ttcccgtctc ttccggtatt tccacaccga acaggctacc tatggcggcg aaggaatatc    360
cagtccgagc caacgtgcta cctgggagat cgactcccct gtacgagcag agagagtatg    420
gtaatgaaga agacgacatt gaaagctgat ccgctccggg gatattatcg atcatgggat    480
aggtggcaaa atgataggaa cggctccgcg caatccgacc cagctgagaa aggtcttacc    540
ctgaatgata ttttgcgga gggaaatcagg cagaaa                                     576

```

(2) INFORMATION FOR SEQ ID NO:9

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 588 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...588

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9

gctttcatct	ctattctcct	tttttattct	attgtgtttt	tttcatattc	tcttcggaca	60
tagcggtttc	cgcatacaag	gcttctctct	cccatccggc	atttccacaa	actccccctc	120
cgcatacagg	ccgcgatcga	gacaatatcc	aataagctcca	tggcgtaggc	cgtttcccgg	180
acggcttcgt	cccgatgaga	gcgatcccg	tcctgttgga	cgaaagtcgt	cccaccgtat	240
tcagcccacc	gccacacct	tgccagtg	caaagccaca	caagctacag	cccctagcgt	300
accaaccgaa	cgacacaacc	gcttgaagga	tgccggacac	gatctcccaa	ctcgccatct	360
tttccaagag	aactttgtcc	gaatcatctt	cctngcccg	ttcacgctca	ggaagaccga	420
tcaaagccc	caaaagctgc	agtccgaatg	atagggagcc	ggatccggca	atcccttcag	480
caagcaatac	gctccaactc	ctcttgcgga	aaatggtacc	ggcataaaaa	ctttncagtg	540
ccggtcgatt	ttattctctc	ttacgcatca	tcttatcacc	tcctagct		588

(2) INFORMATION FOR SEQ ID NO:10

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 473 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...473

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10

aacacaaaac	tttagaagg	agtcttacac	ttcgctccat	cgagtgtctt	cctttaccgg	60
tagtttcatg	agtggcaaga	ccgctgccct	gaatgatgtc	ccatcaaaat	caatagcaaa	120
cagattatgg	ccggagattt	atacgacgat	cccgcgtggag	tgtaggaggt	atgttccggt	180
ccaaataactt	ggatctcgta	gntgaaatac	cttcgaaggc	aaagacgatg	acatgattag	240
taaggctttt	acgtcacagg	ggtaggacga	ttgttcaaaa	acctcgatat	catcgatcat	300
atgacttcat	ggatttgtac	gaaaggcaac	atgtctcata	atataccgcc	ggccttcaag	360
tactggttct	tcccaaagtg	tcgtttgcag	gccagtatgt	attgagcaat	ccgaaaggcg	420
agtacaacaa	cacacacgct	cgctaacaca	ggtgcaggta	gcattctgac	agc	473

(2) INFORMATION FOR SEQ ID NO:11

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 625 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...625

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11

tcttattata	gaatttgatg	atttcggttaa	tcattttcttt	ctcctccggt	ctccctccgt	60
agtggtgagg	gctaccgctt	tcgagagctc	atccacggca	tatcgtattt	cttcttgctg	120
atacctctgg	taacgatgcc	ggtactttga	ccagcaattt	tgaaaacggt	gacaatatct	180
tatagataac	ggacatgctg	cagcagaaaa	gcgcgagtat	tgcagcggat	tcttccgcgc	240
atacatttcg	gcagaatctc	ttcgaacagc	aaaaggacca	gtggccagga	gtatgtctgg	300
atcagaaatc	caatgatcgg	agaagagaaa	acgaatgtct	gctgatggca	taattggaaa	360
ggataacgat	ggctacatta	atcacattat	tccgatcaga	atagtagcta	atagctgatt	420
cgaattgtct	aataaattgg	aagcgcgatg	tcggaagagt	gattccgttc	gcggatgttc	480
tgcagatcga	cggctttagt	gaaaaataag	ccacctcaca	ggaggacata	aaagccgaaa	540
gcaaagaaga	agcaggtcga	taatgaaagc	cactatggct	gctgcaccat	aggatgaccc	600
gaagcccttc	aaaaaatcag	tataa				625

(2) INFORMATION FOR SEQ ID NO:12

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 622 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...622

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12

ggggatttgg	ggcaagataa	gttactttgt	agagcttgaa	tggcaaacag	ggattttctgc	60
ctattttcca	aaaatctgca	tcgtcgattc	ttgaaacggt	tgagagccaa	cgggggcgca	120
aggagtttgt	tctggttggc	cacccgagag	cttcgtctcc	ggggagagtt	ttaattatct	180
tatcgggcaa	cttaaagcag	ctatcagttc	ttgagcatga	cagagttgta	tgatcagagg	240
ctaaaatagg	cacaaagaaa	ggcgtcaagg	atactcataa	gcccgaaaca	cctgcccaga	300
aggaccatct	ccagagggac	ctgaagctgg	tttgtaatta	gttatagaag	ctcacccacg	360

tagaggtagc	gagttttgct	ggggtgagtg	tcatctgtta	ttgttttagtc	attacgaccc	420
aatagatggg	tattatcaaa	atccatatta	gatatgctta	atgcaattta	tttttaccga	480
ttgtctcatt	gctttatcgt	catcatatcc	cgatattgcc	aaagttaatc	acattgctct	540
cttcctcatt	tataatagca	agatacctcc	tcagctaaga	taggcaaaga	tctaagttcg	600
gtatggaggg	ataagtgttg	tg				622

(2) INFORMATION FOR SEQ ID NO:13

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 605 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...605

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13

agcagccggc	cggccaacgg	aaagcttcgc	cccccatggc	ggcacgaata	tttcgataga	60
cacgtaagaa	gggcttttga	aagacgagcg	accacgtact	tgataatggt	ggctccccc	120
ttcacgacac	gctgtttcag	ttctgccact	gctcgttggt	cagcttgctg	gtaccgatca	180
gatcggtcag	aggcgtccgt	ttaccttggc	cgtgctggcg	aaaacagcca	tctgctcgcc	240
atgactccat	aagtacgcgt	gttggtcacg	agactttggt	tgatgccgaa	gtgctagcca	300
gttcgctttg	cagacgtgtg	ctgtccaaac	cggccaaagt	agtacctgcg	aaggcttcag	360
cccggagtag	ataagcgtaa	caagaccggt	gagtcagccg	gattgaagat	gatgatcacg	420
tgcttacagt	cgggacaata	gtcttgatgt	ccttgcccag	ctgagcagcg	atttcggcat	480
tgcccttgag	agatcctcgc	gggtcatacc	ctctttgcgc	ggagcaccgg	ccgaagaaat	540
atatatttgg	catctgtaag	agcctcttga	tgtcngatgt	aaaagtcaat	tcaggccttc	600
gaatc						605

(2) INFORMATION FOR SEQ ID NO:14

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 590 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature

(B) LOCATION 1...590

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14

```

gggttctccc ttgtcgccca tcgtactcga tgaagagaga aaggcgatac tcgtcatatg      60
cgcaacaacg gcttctggaa gttctccgcc gaggatgtta ttatgaagca gatactaccg      120
tttcaggagg atcgggtacg aaatctgcga tctgaaatta gtgggtcaatg gcatcgggcg      180
ttatccatat cggatcgca ggtattcttt catgcccgat tatgatactc tcgaatcgga      240
cttcaagttc aggagctgcc acgtatcgat tcgatttcgc gtggcgatta cacttttact      300
atgggagtag gggacgttat atccgggcat cggctctcac gcgtcggtgt ccgttacacc      360
gggagctttt ttctgcgagg atgatgtgga acctcttata tcaagctgaa tgcgctccct      420
atcgttcgga acgtgaatat cgatttgtgg agcacaatgg taaggatgag attgctctgg      480
cggatagctc cgccttgtgg actgctatat tcttaccgtt ccggccaaga gcaaatacgtc      540
gaagccgaag tcctcggcac caattccgct ggagacttcg gggcggttg      590

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(2) INFORMATION FOR SEQ ID NO:15

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 522 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...522

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15

```

cctgagccac acaactggtct ataatggcat tggacacttc ggccagacgt atacgttggc      60
ctcgcgagca cgatagtcac ctccctttgat cgtatcgtga agagtcgata aacggagtcg      120
ccgtcgttct ggtagttctt ggcggcatga tacctccctg tgcagcgatg gagtgcgcac      180
ggcgaggaga atcctgatgc agaagttaag cacattgaag cccatctcgc cgaaagaagc      240
agcagcgaag caccggccag gccgggtaccg accacgataa tatccagacg acgttggttg      300
ccgggttcac cagcttctga tgatccttat agttggtcca ctttctttca gcgggcccgc      360
gggtattttg gaattttatt tagccatagt gaaatacttt gaattagggt gtactatcaa      420
ccgatgaatg cctgacaagc aatactatca ggaccaaagc gaaaccgcct accaatacgg      480
agaaaccaca tagagatgca cttgacacga ttcattccaga tg      522

```

(2) INFORMATION FOR SEQ ID NO:16

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 617 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...617

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16

gatagttgat	caagttctta	ccggggaagt	tcttcgtacc	gttgaaagca	tgtgttccaa	60
gaagtgagcc	aaaccggact	ggctatcttc	ttcaagaaag	aacctacctt	ttgtgcgata	120
aagaaatccg	cacgatcttt	cgggttcctg	tgtgacggat	gaaataagtc	aatccgttgt	180
ccaacttacc	gacacgacag	ccggatctgt	agggagtggc	tgagcctgtt	gggcagaaag	240
cttcacggaa	tgaatccac	aagcagaaga	ccaagtgata	aaaatctttt	caatccatat	300
aggtatctaa	ggttactgg	ttggttatta	agtaatttcg	gccaaagtac	ggttttttca	360
tcggattagc	acttttcaat	ccggctgtat	gtcggaaaaa	ccgtgagagt	cccactttac	420
aggaccggtc	tctatacttg	gtcgaaaaaa	caaaatgacg	cacacgcttt	tcgcagggaa	480
taacagagca	aaaagaggca	cgactctccc	gagcgggtgc	tccttcaaaa	acatgagata	540
gataattact	tcgtttctat	atgaatgtga	tcctcagtaa	ttcgtttctg	gctcgaagta	600
agcctgcgga	tgagcgc					617

(2) INFORMATION FOR SEQ ID NO:17

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 587 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...587

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17

ggcgaactga	tggccgtgca	ggaacgtata	tccgccgctc	ataacgaggg	aagatcggca	60
gccgcctgca	tgtggtcata	gaccgtgcgg	aagatggctc	tatgtggggc	gtacggaata	120
cgactctcct	gaggtcgatc	ccgaggtctg	atcccgttcg	tctccgggtca	ggagttgaat	180
cccgggcggt	tttataggcg	gaagtgaccg	gtgcagagcc	tttcgatctc	tatgcacgta	240
tagtgactga	taacaccctt	cctaccgaaa	ccaaaagcag	aaccggatga	tacacaggaa	300
ctttggattg	cacagttggc	tacggcttca	ggtgtcgatg	tatgacctcg	aacgaactat	360
ggtctcatta	ctgtcgtttg	atggggcagt	tctcaccaaa	ggagacgctg	tacggcaaga	420
tggtatcggc	ttgtggcagg	cgtaaaaagc	gatgaatatg	taggaatccg	tccggacggc	480
tcacgtgtgc	ggtaccgccc	aggatagaac	tccggctgac	gtcttcgggt	gcctcggcct	540
ccgagagacg	atccctcatg	ctcttataga	cttggtgcct	tacacgg		587

(2) INFORMATION FOR SEQ ID NO:18

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 563 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...563

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18

aatatatcga aaagagttct gaggggttga tggagttggg catgatgcgc ttgtcatctg	60
cttgtcggat gacgataagc ctgtcgggtgc gatagatcgt atgagtaaga tgcctttcat	120
cgacgtgtag ccgtagggtt attcgttttc ccgaataccg tcggctggga atagccgtcg	180
agtctctccg caagattccc attatgtttt agactatntt acgcttgcat cagatcatcg	240
cttattgctg gaagataaca agccgagccg gatgctgttc gaagctgccg gcttgagcat	300
acagccacc tccgccaatg gatgtggcat gccggcgatt atttgatgtt ttgctttatc	360
agttatggaa aagatagttc cccctgctgt ccaatagaag agctgcgccg cattctgcgt	420
gagcacgaat acaggtatta cttctctcat ctccgactat cgatgacttc gagtatgacg	480
ccatgatgaa cagcttgagg agctggaacg ggaatacccc gaatgggata gtcctgactg	540
cctacgcac gtgtcggaag cga	563

(2) INFORMATION FOR SEQ ID NO:19

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 954 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...954

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19

gaaccattcg taacgcagtt ctgcagcagc catctcgatc gaaatcgacg ctgcgcgagca	60
taacgaaccg tgtcgaagtc gatccgatgg agcggaactc cagatctggc ataggcgctc	120
cacgaaagct gcatcctcat cgctctcacc cctcggaggt gaaaattgca gtgtgccgcc	180
accgtctcat acccattcg cgcaatacgc agagcagagc caccgagtcg gcacctccgc	240
tgagacgacc agtacgaggc ggtctccttc tcggaagagc ttccgctctc tgatgtcggt	300
cggacacggt ttgtcaggga aatcttcac tttgtgtgaa tattcagggg gaaaatatcg	360
gcccggccat cctgccgatg gaaaaaattt ctggaaatga agaggctctt tatccgaata	420

agccgaatgc	tgccataaaa	caagagagaa	ctctcgtcct	ctctcatcag	tccctgcggc	480
atctccgaag	gagccgaacc	ttatctcgga	aaacttatgc	acctgtgaac	ccgaagcatg	540
accggaagcg	aaaaccgcct	acaccggcct	cttactcttg	gggagcttat	gctcccattt	600
cgggatcgac	catgattcgt	ccgcagtatt	cgcagacatg	atTTTTTcc	gaagcttgac	660
gtccagctgc	ttctgaggag	gaatctgttg	aagcaaccgc	cgcaagcatc	acgctctacg	720
ggcaccacgg	ccaagcgttg	tgcgagcct	ttctgatgcg	cttgaaagcc	gtcagcaggc	780
gcggtcgac	ttggttcga	gcttcttcgc	cttttcgcgc	agtttctctt	cctttgctta	840
gtctcgga	tgatggtatc	cagttcgccc	gcgtttttcg	ccacacctcg	ctatgctctt	900
cagcacctct	tcagagtagc	tatatcggtc	tcgctgtgga	ttcgacgtgg	atcc	954

(2) INFORMATION FOR SEQ ID NO:20

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 598 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...598

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20

taacgctctg	gacattccgc	tctatctgag	aatcgctaac	gaattgtatt	gaagcgtctg	60
atcgtgggcg	gtttcgatgg	tgtgtatgaa	ttcagccgaa	tttccgaaat	gaggggatgg	120
accgcacgca	taatcctgag	ttcacggcat	ggagatctat	gtggcgata	aggattacaa	180
ctggatgatg	aactttcgga	gcagatgctc	gaacgcactc	gtatggatgt	gctgggtact	240
actcaatgaa	ggtgggcggg	aaattgatcg	acttcaaggc	cccctacaag	cgaggaccat	300
gatcgaagcc	atccatgagc	atacgggtat	cgacatcagc	ggatgaacga	ggccgagctg	360
cgtcagggtat	gcgacaagct	gggcgtagag	caaataaaac	gatgggcaaa	ggcaagctca	420
tcgatgagat	cttcggcgag	agtgcgagaa	gaactatatc	cagcctactt	tcacacaga	480
ctatccgaaa	aaatgtcgcc	tctgacgaag	gagcaccgca	ccaatccgga	gctgacagac	540
gattcgagct	gatggtcaat	ggcaaggagt	tggccaacgc	ctactcgggc	tgaacgac	598

(2) INFORMATION FOR SEQ ID NO:21

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1349 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...1349

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21

```

cagatatattc tgcaaacaaa tcagttccca aaatgcggaa agcttgacgg tactgaaaaa      60
agttgacagt tgggcgggat gcaaccagta tccattatgg caaacattta aacaactttg      120
aacgccttag catccttgag gattaccctc ggggtcagat agcaaagtag ccattgagca      180
gaaatatggt ctaagtatgg tctcattcgc tcttggttta gtaaatttgg actcgaagat      240
aaagtcatcc agtcccaatg aaagtgtccc aatcccccca gagtgaagta ccccgaaacga      300
aaaagaagag ttagagcagc tacgtaaaga aaatcgtgtc ctcagagtcg tctcaagcga      360
gaagaactag ggcatacaagc ctacaagcta ctgtagagtt ggcagaagaa acctacggca      420
ttcagatacg aaaaaactcc gagccaagta gttcacggtt tatcagagcc ggagcctagg      480
tactcctattg tcgactctgc gaactgcttg gcttttagccg tcaggccttt tataaacgta      540
tctcaacgat ttagctaggc acgaggagga tgtcctatgc agtagtatat ccaatatattg      600
tggcacttaa gacaagcaga gcacctacct caagccgctt ccgagagctc atggtgcttt      660
gtcagcaata cttcggcccc aagttccgct tgggcgcgat cgcttttgcg cctactcag      720
acgccatggt atgatctgcg caaacggctc gtgcgcctc ggacaaccaa ctctcggcat      780
aggcctacaa gtatgaagac ctgctcaata cagagcctaa gtttgtgcct caagacctgg      840
ggaactcctt gtagcagaca tcacctacgt ggcttaccaa gagggtttgc ctatctctcc      900
ctactgaccg atgcctatag tcgctgtatc gagggatttg cttacatccg accctggaag      960
ttgaaggctg tttgaatgct tgcataaagc ctttgctttc ttacggatca acatcaaatt     1020
gatacgacca tatgattcat catagcgacc gaggcattca gtatgccggt aagagttaac     1080
cgatctgttg catgggagag gctggcgcat cagtatgact cagacggaga tcctctgcat     1140
aatgcattgg ccgagcggat gaacaatacg ctcaagactc atggcacatc tcctcttcga     1200
aacaatcttt tgatcaagca ctctctctgt agaccgagcc gtgcgcatgt acaacgagggc     1260
gcgtccacat caagtctaag ggcgaaaacg cctatgcaag tcattacacc ggagtctgaa     1320
aatcgttact ggcaaggatc gaacattgg                                     1349

```

(2) INFORMATION FOR SEQ ID NO:22

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 633 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...633

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22

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gaaaacgaca ttcttgacca tgagtccgga cgggcgagca tccctaccgc tacgatacag      60
gggcgttttg ttttagttaa ctttttgatg aaatgagcta ggcagctgtg aattgggcta      120
tgctgatagg atttaatccc tcatcgccat accgcctatc gtgcctcgta tgccggagat      180
tgatttgatc aacgtctgat attgtgtgat gttagatgaa tagattccta agattagagg      240
tcgggggggt cagtcccgaa atacgtatto cacttccttg taatatccgg tcagcctcgc      300
gaatagagcg attccgggcc gattcggaaa ggtacgatca ggccacgca gctttattgc      360
caagcatggt catggggaaa gcgactcctt cgagacgaac atatccaggt tggaaccggt      420

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cgtacatttg	atcagttcga	atgaatatcc	ccatcggtgt	acttatatat	atagcgggaat	480
acgctctcct	aaaaccgcct	gaagtgaagac	tggtgaagac	atagatggag	tccctctcag	540
attgaacatg	aaaccttcca	tcctgacgtt	gatcttggtc	ttgttcagac	gggaggctct	600
ttccccttat	ccagtagcctg	catataaaga	tgc			633

(2) INFORMATION FOR SEQ ID NO:23

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 713 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...713

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23

ggcagtagcc	tggtcggcag	cancggtggc	ctcagcatcg	cgcaggtttc	caccataccc	60
tcgtattcga	gtgctnccac	acgattggcc	agctctattc	gcgtacctta	tccgttgtac	120
ctgctccgat	gctatccaaa	tacctttgct	ctggagctct	gctcttcggc	ggtcgttctg	180
catggctttg	accttggttc	gcgtcgcttg	gcgttgagtt	ctccgcggag	ttgtacttcc	240
tgccgtgcag	ttgggtctgc	ttcatccgca	ggtcgctctg	caatttctcg	aactcgtgcg	300
cacggactgc	aagtccagtt	ccaacaaggg	ttcaacctcg	tgccgaatc	gcctgcatgc	360
ttgagcacag	ctatcagacg	cgccctgcacc	gggaagtgat	gatctcctcg	aaagccggca	420
ccacttcgcc	ggaagccgag	gagcgatctg	cacttctcct	ttgtccaccc	gccccaaacg	480
cagagaggct	cggatatgga	gccttggatg	gaggagagca	accaccatcc	gcctaagaaa	540
gaaggactgc	cgaagctggt	atgattgagg	taaccgtctt	tgcttttccg	ttgagccggt	600
cggcgaaact	tgtctgtcat	gaatcggttt	cttttttcgg	tgcgagccct	tggtgctcgc	660
cggcttcga	agagcaaagt	ccatgcaaac	aaatccctgg	ccttattaat	cag	713

(2) INFORMATION FOR SEQ ID NO:24

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 296 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature

(B) LOCATION 1...296

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24

ggcgaagatg taaccctgca ggtatttgcc ggtacggagg ggattcccccac gatgccgaag	60
taatcttcat gggcaaggct cctcgcctca aagtgggaat cagttggccg gccgtttctt	120
caacgcttat ggcgaacctc tcgacggggc ccccaaccgg aaggaaaaga agtggagatc	180
ggcggtcctg cegttatccg gtccgtcgta agcagccttc agagctgac gctaccgcta	240
tcgccgtatc gacctgaaca atactttggt gacgggacag aagattcctt tcttgg	296

(2) INFORMATION FOR SEQ ID NO:25

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1207 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1207

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25

ggcatgaatc agttcaagga tatcatactc ggaaataccg aggctaaatc actcgtgtag	60
cagactcgca gaagtgtttg cgtgtaagcg gcaagcacac gacctcgaag aggtaggcca	120
tgacacctat catcatacca tggtcgaatg ctcggaactt ggtcgttcgg cgattacttc	180
aagaaagaag ccatcgatgg gcttgggaat acttggtgac ggtgttggtt ctggatcccc	240
agcgttctat gctaccgtat tcgaaggcaa cccgaagaa ggccttgacc gcgaaacgaa	300
gcggcatctt actgggcaca gtttctgcct gaagaacgaa tcacaacggc aataagcatg	360
acaacttctg ggaaatgggc gataccggtc ccgcgggtccc tgctcgaaa tacatatcga	420
cctgcgttcg gacgaagagc ggcccaaata aacggtttgg agctgatcaa taagagccat	480
ccgcaggcca tgagatatgg aacctcgtct tcatgcaata caatcgaaa gccgatgctc	540
cctgacgcct ctgcccacac aggtgatcga tacgggcatg ggattcgacg tctgtgtatg	600
gccttgacgg gcaagacttc caattacgat acggatgctt tcagcctctt atccgtactt	660
tggtacgat gacgggaatc ggatacgtga ggattctacc tcggatatag ccatgcgcgt	720
agtagccgac cacatcggac tatgccttt gccatcacgg acggccaatt gccctccaat	780
gccaaagccg ctatgtcatt cgcggtatcc tgccgcgtgc ggttcgctac ggcacacctt	840
cctacactgc cgcgaagcgt tcatgtaccg attgctgccg acctgatcga tacgatgggc	900
gatgcttata ccgaattgca agcacagcgc gactgatcag ccgcgtgatc aaagaagagg	960
aagagagttt cctgcgtaca tggaaacggg tatccgcctg ctggagaaaa aaatagccga	1020
caataaggca ccggtccac cgtattggac ggtgtcgtc ccttcgaatt atacgatagt	1080
tcggatttcc cctcgacctc acagccctga tcctatcgga aaatgggtga cggtgacga	1140
atcaggcttc gacacggaga tgcagaagca aaaagacgtg cccgtaatgc cgctgccgta	1200
gaagccg	1207

(2) INFORMATION FOR SEQ ID NO:26

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1845 base pairs
- (B) TYPE: nucleic acid

(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1845

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26

tcgcttgaag	cagcacgcac	atcatcgtag	ctgataccca	gttcgtctac	aagtctacac	60
tcatctctct	gctcatcctc	accaaatagt	tcagctgcta	ttgcgcggat	tgcgctgctc	120
cttgccatct	atatagatct	gattattctg	atgctcaatt	cttgtccggg	cataccacaca	180
cagcgtttca	catagtgtcg	cgtctgtcca	cggggcggta	aacgatctcc	ccgtagaaat	240
ccggatactc	caaagctcct	cccgctctac	gagtttcttc	cacatataat	aatcggattg	300
ggctgcttga	cggccaccgt	atcgcccgca	gggaagttaa	agacaccaaa	tccccctcct	360
tgacgtgtcc	gaaacccttc	agtcgcttgt	acgcaagaga	ggtttgtccg	agaacgattt	420
gccaccgcgc	aatggcatcg	tttgtgcgct	agcggcacac	cgcgcggagt	cataggcgaa	480
cgcggtccgt	cgaagagctt	ctcacgaaga	ggtagtcgcc	tataagcaag	gtcttctccg	540
cgaagaagtc	ggaatggcga	agttctgaaa	caggaaagcg	aagataaagt	aacggctacg	600
acacagtaga	taatgtctgc	caccagctgc	caaatagacc	aagcgtcttg	tttcggatat	660
tcttatacca	gccccatttg	ataataggaa	gaaataataa	tctacgatca	aaggcagaaa	720
aatcagccaa	aacggccggc	ccatatacaa	aaaaggaggt	aaagaatagt	aatggcaacg	780
cctttatacg	acgccatggc	gtcaaactct	tccaatggaa	ggtcatatcg	ttatctgttg	840
ttataagctg	attaaatcgt	tcacgtcgag	aaagcctttg	tggtggcagc	atattcggca	900
gccaacacgg	caccaagagc	gaatccctct	caccaaagc	ttcgtggcat	atcgtcagcc	960
gatccacctc	ggatgtatag	atatgtctgt	cgtacccggg	acttcgcctt	ctcggatgga	1020
ggtgatcgga	gttcgttctc	ctccgggtgc	tccgtcagtc	tccaagcgtc	cagcgaggag	1080
attcggctat	caatccctcg	gccagtgtaa	tagccgttcc	gctcggacgt	ccaacttatg	1140
tacatgatgg	atttcggtca	ggtgaggacg	atactgtcgt	gccggctcat	caatcgggca	1200
aacatacgac	tgagcgagaa	aaaaaattga	ccccgatgct	gaagttcgaa	gccagaaga	1260
gggtctttcc	ctccgtcggc	agcgttcttc	cagctcgggc	agacgctctg	tccaccccg	1320
agtcgcgaca	ccaccggcac	ggacttatcc	atacagcgcg	agcaattcgc	atggccgcac	1380
ccggacgggt	aaattcgatg	gtacatcgcg	ccgaacgaaa	cctatcgaat	cgaacgatc	1440
ttcctctccg	gcacgatcg	tcagcaccac	tcatgccttc	ggctgcatgc	aatccgttcg	1500
atcacatgtc	ccatcttgca	taccctatca	gtactatttt	cataggattt	tcttcttgga	1560
aaaacgaacg	taccggcccg	caagggccaa	aggtacacag	atttagcgca	agttcatccc	1620
gtgatcttgc	ggtacagatc	cagcgcgat	atatcggtca	tgccgggtata	tagtccagcg	1680
tgcactgtat	cttaccgtag	aggctctcct	cccggtgttg	tactgcgtac	ttaccgcgact	1740
gagcagcgtc	cggctatagg	catgtccgga	ttggtgaggg	cctgcatcat	cttatctatc	1800
agcgcaccga	atactgatgt	ccggcaagct	ccacatccac	cacgt		1845

(2) INFORMATION FOR SEQ ID NO:27

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 573 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...573

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27

gtcttggatg	gtgcggcgtc	ggtatgccaa	cgaacgctcc	acatcggcac	cgtagcatcg	60
gccaagaggt	taccactcg	ctcccaagta	tagggggagc	gtgcaagtga	tcatagaaag	120
tcatattccg	gaagaattat	ttcagatgag	gaaagaggta	aacggcgagc	tggcttnggc	180
ttcggagcgg	acgctgcgaa	cttggttcg	aaagccattc	ggccggettn	cacggcaagg	240
cggaagccgt	cccattgctt	acgggatctt	ccgccacggn	tatggccgta	ttcacagaac	300
ggcatcagcc	cccatctcca	tggtttctgc	cgcttggctg	ggccaccgat	acctgcatca	360
atgacgaccg	gcacacgact	ctgttcgatg	atatacggat	catttcacgg	gtcttcagtc	420
cgcgattgct	gccgatggga	gaccagtggt	catcaccggt	gctgcgccgg	cttcttccag	480
atgcttgca	gcacaggatc	ggcctgaacg	taaggggagca	cgataaagcc	acgacgaaca	540
actcctccgt	ggcacgaagc	gtctcgatag	ggt			573

(2) INFORMATION FOR SEQ ID NO:28

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 464 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...464

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28

ttagtggctg	aaatgcgatt	gccctgtgga	atatgcatcc	tgctatatcg	aaatgtgtta	60
tttttttata	tttgtgcgga	ctttgttcag	agctgccttt	tcctattggg	atcgggtggtg	120
atgattaaaa	gggaatcggg	tgaaaatccg	agcagtcccg	ctgctgtgaa	ccttggttaag	180
ctttcggcat	ttatatcact	gtccgttctg	tgccgatggg	aaggagtcgg	aaagtatggg	240
gtgaaccaga	agacctgcaa	agtctttgtc	tgccgcttcg	aggaaaagcc	gggaagaatg	300
cacttggtgt	caatccgact	ttactgccac	aaggatccgn	ttcttccctt	tcaatccccc	360
gaggaaaatt	ttgtttccga	cgcagcggaa	acatccgatt	cttttgctag	gaattggagt	420
gtatttgnga	gcggaacctt	aggtcttgtc	ttggcgggat	gagc		464

(2) INFORMATION FOR SEQ ID NO:29

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2759 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...2759

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29

tttttgggat	tttggtttga	gatttgggag	attttcggtt	cgagtttcgc	ttgtgcgatt	60
ggtgcctctg	tttttttcca	cacctttctc	tttcccttta	ccctttattc	cggaccaacc	120
gccaacattt	cggtcacaaa	atctttttgt	gcgagggaaa	aaacatcttc	tcattttctt	180
tcgtttgcgg	tcttttaatt	gttcttacgc	gcgcgaacat	attatatatc	cgtccctttt	240
tgtctctttc	ttgggaggga	gtccttttct	tcgggggctg	ttttttttgt	cgaacggttg	300
aaaaaagatt	ttgaaagatt	tgtctgtaaa	gaaaaaaggc	gtattttgtg	accgcaaaag	360
cgattgctgc	ccgattgata	gaggaattgt	tcgccgagcg	cgtcgggatt	cttttttttag	420
ggggaggatc	aggcgacgag	cttttcttga	gcgtcagccc	tgaaaaaaga	gccgattgat	480
tttgccgatt	ggaaaaaggt	tttacttttg	cacctactgt	ccgtgcttg	atcggtctct	540
gccgtgaggt	gggaggatag	gggataaaaa	gacagcgatc	attgacatgt	tcatacgaag	600
aacaaaagtg	tagtacaaga	aggagagaga	agggcttgcc	atttcttgca	ggattttctgc	660
cctctcgcag	agaggagggc	cgatttccgg	ctgttattga	cgaaaccgtc	tctcgacgag	720
gacatatact	ctgtcaagag	aaaaacgaaa	agaccgagag	agaaaaagaa	accgaggtgt	780
actactgata	aatcgaatta	tccaaagggg	aataatcggc	gtctgagcga	gaaaacagaa	840
gcaaacaac	acaaatatga	cagtggagag	tttgatcctg	gccaggatga	acgctagcga	900
taggcttaac	acatgcaagt	cgaggggcag	ctgatcttag	cttgctaagg	ttgatggcga	960
ccggcgcacg	ggtgcgtaac	cgtatgcaac	ttgccttaca	gagggggata	accggttgaa	1020
agacggacta	aaccgcatac	acttgattta	ttgcatgata	ttacaaggaa	atatattatgc	1080
tgtaaagatg	gcattgcgtc	cattagcttg	ttggtgaggt	aacggctacc	aaggcgacga	1140
tgggtagggg	aactgagagg	tttatcccc	acactgtact	gagacacgga	ccagactcct	1200
acgggaggca	gcagtgagga	atattgtcaa	tgggcgagag	cctgaaccag	ccaagtccgc	1260
tgaaggaaga	cagtctaagg	attgtaaact	tcttttatac	gggaataacg	ggcgatacga	1320
gtatgcattg	aatgtaccgt	aagaataagc	atcggctaac	tccgtgccag	caccgcggta	1380
atacggagga	tgcgagcggt	atccggattt	attgggttta	aggggtgcgt	ggttggttcg	1440
taagtcagcg	gtgaaacctg	agcgtcaca	ttcagcctgc	cgttgaaact	gccgggcttg	1500
agttcagtg	cggcaggcga	attcgtggtg	tagcggtgaa	atgcatagat	atcacgagga	1560
actccgatgc	gaaggcagct	tgccatactg	cgactgacac	tgaagcacga	aggcgtggta	1620
tcaaacagga	ttagataccc	tggtagtcca	cgcagtaaac	gatgatacta	ggagtttgcg	1680
ataaccgctc	aagcttccac	agcgaaagcg	ttagaatacc	acctggggga	gtacgccggc	1740
aacggtgaaa	ctcaaaggaa	ttgagggggc	ccgcacaagc	ggaggaacat	gtgggtttaat	1800
tcgatgatac	gcgggaacct	taccgggat	tgaatgtag	atgacggatg	gtgaaaaccg	1860
tctcccttcg	gggcttctat	gtaggtgctg	catggttgtc	gtcagctcgt	gcgtgaggtg	1920
tcggcttaag	tgccataacg	agcgcaaccc	acatcggtag	tactaacagt	tttcgctgag	1980
gactctaccg	agactgccgt	cgtaaggcgg	aggaaggtgt	ggatgacgtc	aaatcagcac	2040
ggcccttaca	tccggggcac	acacgtgtta	caatgggagg	gacaaagggc	agctaccggg	2100
cgaccggtgc	gaatctctaa	acccttcccc	agttcggatc	ggagtctgca	actcgatccg	2160
tgaagctgga	ttcgctagta	atcgcgcatc	agccatggcg	cggtgatacg	ttcccgggcc	2220
ttgtacacac	cgcccgtaaa	gccatgggag	tcgggggtacc	tgaagggcgt	aaccgcaagg	2280
ggcgactag	ggtaataacc	gtgctggggc	taagtctgaa	caaggtagcc	gtaccggaag	2340
gtgcggctgg	aaacctcctt	tctggagttc	ggaccgattg	acataaacgg	ttgcccgaag	2400
attaaggaga	attggttgaa	ggtagggttt	tttgcaacgg	aaccggtgtc	gagattttatc	2460
cgatcggggg	agagaagaaa	gaccatatat	cgccttcggg	tcggctctcg	gctttttttt	2520
tatccgaaaa	actttactgc	acggcgaaag	ccatatttgt	tcgacgtatg	aataaaacga	2580
atataacctg	cggatatccg	atgcaatcaa	gcgggatgtc	cgggaggggtg	ttctctctct	2640


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cttgaacgaa gatggagaga tacaggaaga taaggagtct ttccctcccc cgaggettgg      2700
ttcgtttatc ttctgagctt tccctgcttc gaactttgct tcttttttgg aagcgaggc      2759

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(2) INFORMATION FOR SEQ ID NO:30

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 558 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...558

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30

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cacagatgga gaaaatagcc gaccatatca gcgaatggga acggagggat cggtaggata      60
caacctacct cactcggaga ccgtattgct gatgtacata acctatatgc cgatacgagcag    120
atgaggggaa cgcgcttgct ggcattctac aggatcgatt caacttcagc atgggaggag      180
gtacattttc tctcatccgg gtatcagagc ttcggtggtgg agcttcaaca aggagttgct      240
cgtcacccac gtatcagcgt gggttattct cccgaaagca acccggtctt ggtatgcgtg      300
cagccgccgg actttattat caggcacctg tttacaaaga gctaggcaga cgcataagga      360
tgccgaaggc aataacgtgg ttgtcctcaa cggaagatcc gctctcaggg agcttttcac      420
attctcgag gagcagacta tccttcgaaa tgggggggcg aaaatcaagt ttacggcaga      480
ggcttactac agagcctgtt caacatcaac ccgtatataa tagagaacgt gaagatccgt      540
atctggggcg aaacatcg

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(2) INFORMATION FOR SEQ ID NO:31

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 655 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...655

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31

gtagtttgaa	gggcagctga	ttgaactttt	cgtcatgggt	gtggaaggta	cggcagcctt	60
gaagctgcta	ttgataagcc	gctccgtctg	aatacgcgaa	cgtctatatc	gctgatgatc	120
atcctttcct	catagcggaa	tcgctcctct	cctccacgat	ctctccggcc	tcggcaataa	180
aggctttgcc	ggtgaaacga	tatccgtgga	gctttcgccc	gtatccgctg	ctggcatata	240
cataacacag	ataccctgtg	aagaaaggcc	gctgataagc	gatctcaagt	aagatgtttg	300
cctgcatttt	cattgctgga	ggagagggtg	aagatcacct	ctgtccataa	aggcagagac	360
gtgtaccocg	agtgaaaggc	gtccacatat	cccacaaatc	tctatgccga	cacccacggt	420
gccacatttg	aatatgaggt	tcgcccgatg	ggtacgctgt	gctgaccgat	actgatggtc	480
gagtactgca	ggtatgagcc	ggngagaacc	agcgagcctc	ctgaaattcg	cgatagttcg	540
caggtaagtt	ttggggatgg	caccgagtat	ctttccctgc	tggaatacac	agccgagttg	600
aacagctttt	cttcacgcgc	cagcggcatc	cccactacac	catgacagtc	gtatt	655

(2) INFORMATION FOR SEQ ID NO:32

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 652 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...652

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32

aaggcaacgt	ggttgactgt	atcgaatgcg	gttcgtgcag	cttcacctgc	cggccaaccg	60
tcctotgctg	gattatatcc	gccaagccaa	gaagactgga	tgggtatcca	aagagcacgt	120
aagcaataag	aaaggaaata	agcgatgaaa	ataaaaattat	catttctcct	tcaccgcaca	180
tcacacgcgg	agacagatca	aaaagaatat	gtatggtgtg	ctgattgccc	tcttgccctgc	240
cttggcatgt	cggatatatca	gtttggaatc	ggtgcggtga	tcgtaacggc	agtanccggtc	300
ttaactggtn	gcatacgngga	atacctgatc	agcaaatata	tgtgggcaag	gagcctacca	360
tcattggacgg	ctcagctatc	ttgaccggcg	tatgctggct	ttcaacctgc	cgagcaacct	420
gcccgttttg	atcattatca	tggtgcagta	gtagctatcg	cattgggcaa	gatgtccttc	480
ggcggttttg	gaacaacatc	ttcaaccccc	ctttggtcng	tcgtgtattc	ctcctgatcc	540
tttccctgcc	cagatgactc	tctggcctac	cgaaggacag	atgacttcta	tctggatgcc	600
gagaccgggtg	ctacgcctnt	cggcctgatg	aaagcagaat	gagcggcgac	ac	652

(2) INFORMATION FOR SEQ ID NO:33

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 714 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...714

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33

```

ggttgctcgt aaacgtggaa ccgtgtcttg cacgtgtatt ggctgtagga aaccgacaat      60
atcgggcgga gagtacacag gcgatgtttc ctgctatgca ttgatgtagt accacaaagg      120
atataccctt tgcgccattt ggccaaatct ccagtggcac taatgaagcc tatggagaca      180
attcgctctt tgctgacgtt atgcctcaag ttgggcagag gaatcgatag ccgccggtgt      240
agcatcaaca acgtctatgg gtatgtcaag gcagacatgt ttgacaatcc tgtgcagcaa      300
ccaagatgca ggagaaaaag acggacttca atctgaacca agtgcgatct atacaaaaga      360
atcgaccgta aatcctaaaa actactttac ggttatgtgc cgagagtagt cttgcgtgca      420
aaatacgttc ctcatggcat cccggcgtga agccggatga aggctggatc gaatttcagg      480
gtagaaagat agtctggagc agttcaaaaa atacgtagac aatccggttt ctgccggtag      540
gctctggccg acagcatcaa gaaggcgaaa gctgacaatt cattggtcat acagggtgat      600
tcgtcagtca tggaatacag ntctattaca aatcgcaatt tattatgcca ttcctattcg      660
ccatttcgga tgatgaaaaa gctnctacaa agattcctac ggcgtttcgg ctgc          714

```

(2) INFORMATION FOR SEQ ID NO:34

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 549 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...549

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34

```

acgaactgaa aagcgttttg ctgaaagacc tctatgacaa tggcgagaaa tcattcgaaa      60
ccagcagngg cagatcgatt cgctccgaaa tgtattaact totacaaccg tttctcttcg      120
atggagagtg agatagccca agagctgaag tgattttccc ctctatcaat tcggctatgc      180
tggtaccttc gtccgggtgg cacagggtag ggattccggt ttgctcgtcg tgggtcgctcc      240
gaaagccgga taagccagtc ggaaataaac aagctaagca catggatggc tacggtacca      300
agaccaagaa agtgcgcctt atcatagaca ataatcatag gtacaaccat aaacagtaat      360
gcaaatgaaa ttaaaaagta ttcttctcgg agagccctgc tgttgggtgc ttaaggggta      420
gccaaagccg acaaaggcat gggctcctca acgaactcaa tcaggagaat ctggatcgaa      480
tgcgtagact ggctttacct ccggtggatt cgctctacag tttcgacaag ccgtccatgc      540
atgcccgty

```

(2) INFORMATION FOR SEQ ID NO:35

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 687 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...687

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35

agggtcggttaa	tgatgcgatg	tgagtggcat	agacagtggc	ggcaacttct	caatagcctc	60
tatgtccacc	ttttcgagca	gtttgcggtg	gtactgctca	tgccatggat	tgtctccgag	120
agagctgaga	agttttcggt	gtcgcgagga	gcgcgagtgt	gatcttgctg	ttgagtcctt	180
ctttcttgtc	ccggctatgc	tccttgaacc	atctgcacag	aacgtaatac	cgaggaaact	240
gaaaggcttt	ttatgctcga	taccacaaag	tccttattca	gcttcagccc	tttgggtatt	300
tcaaatgttc	gctcaggtct	tgagagcat	ttagcggatc	tacttctccg	gcaagaagag	360
tagcaggtcg	tcggcatagc	ggataaattc	ggtgttatat	gcccggcgat	gtagcgatcc	420
gtgtcttcca	agtagaggtt	gaaagcagag	gggccagagg	gcttccctgt	gggatgccgg	480
aggatgcacg	gcatattgct	gcttcgggtc	cacgactccg	gaattcatcc	agaggctcac	540
atacgggtaa	ggaagggatc	ttcggttggt	ctttggactt	tctgcaatga	gaggggacag	600
ggatagaatc	gaagaagttg	tcaatatcgc	agcgcacact	gtatggttct	catccagaga	660
atccagcaga	tgctgcactc	tacgaag				687

(2) INFORMATION FOR SEQ ID NO:36

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 300 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...300

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36

gagttctgct	tttttagctg	aatccaaata	cattttcttc	cgttttttac	gtgttaaaca	60
ataactactt	ccgtactac	ggtcgtagat	ctggccgcaa	gataatataa	ttccctatac	120
cacagcgga	atctgtttct	tcgctctggt	ataacgatgc	cgttggacgt	acggatctac	180
attgggcaa	gcattcagga	aaggtgaact	cgcccttctt	tgcatttttg	ggtccaaaaa	240

caagcaagaa agccgagatt ctatttactt ttgtgcactc tttgaacgaa aatncgctta
300

(2) INFORMATION FOR SEQ ID NO:37

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 746 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...746

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37

gaagcaaaat ttgtcactgc angcatgtaa cagtattttc tgcaaccgaa tcaccgtctg	60
caaacttgaa tcaaagagat actaatcata agcaattatt tctcaataaa ataataatta	120
cttccatatt tagtcatagc tatcatggta cttattttcaa attcctcagc cgcaacaaac	180
tctacacctt cgttacatcg taggctttgc cctctcgcgc atattcgtct tgctgcttag	240
cttcttgtac ggcgcgaaca gcaagccgat cgtattcata ccgattacaa acgttctatc	300
agtacaatgt cgagagtaag aataactgga gcggatttat ctgtgctatc ctgccggaac	360
gctcattcgc gagcaggtag ccgatgtgga aggatatgcc gcatcagcga atacaacgac	420
aaggaataca tctttatcgg tccgacaagc aaaacggggt gattgcctcc catctttcgg	480
togaatccaa ttctttactt tcttcgacgg ctataaactc cttgagggtg atcccaaaat	540
gtcctttccg agcagaacag tgccgttatt tcctccgcgt tggcagccgt atcttcggta	600
acgtgtctcc catcgggcag gagatttcgt ttttcgattt tccaaaaaca agcagacctt	660
tccgatcacg ggcacatgag agccgagccg gataactgcc atatcagacc ggccgaactc	720
cttttctatc aggagccaaa gaaaac	746

(2) INFORMATION FOR SEQ ID NO:38

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1395 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1395

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38

ccgnttcgca	ggaatcgaag	gtgatgatgt	cgggtgtagta	gtcatgatca	gaaattcctg	60
attggctttc	agnatatatt	cgatcatcaca	gaaaagatgg	agatttctcc	caccgctttc	120
ccatatacggc	tgcatacttc	ggctatcaact	taccgacgat	ccgtcttctg	atccgaggaa	180
ggctgacgcc	ttcagctaga	aattgatttt	tgccattgtc	tttaattatcg	ttttgctcgg	240
tcacctaccc	tcaaccaaag	aaaatataag	tgacagcaat	ggctgtcagc	gctcggccaa	300
atcggccaaa	agggaatagc	tcaccgtata	acgtgtattg	cgtttttgac	ggctccatag	360
tagagggcta	cgacgtagaa	cgtggtatcg	ctgagccctg	tacaatactg	catagacggc	420
cgacaaagct	gtcggctccg	tcgtctgcat	ggcatcgacc	atgagccctc	tggctccact	480
tccgctaagt	gtttcattag	catggtcggg	attccttcca	caaacttcat	atctcctccc	540
aaaagccgac	cagtccgcgc	aagccttcag	tgatcagatc	catggcacgg	aagctctgaa	600
tataccgata	ccgaccagca	tggccagcag	atagggatga	tggtcacagc	cgtaccgaaa	660
ccatcttttg	ccccttcgat	aaaggctcat	acacattgat	gcgtgcacgc	agtccactaa	720
tgacgaatcc	gcacatatcc	caaacagaag	aatggatgca	aatgcagtgc	tgatacaact	780
aaattttccg	gaggcagagt	ccgtcctgca	tagattaccc	ctccgataaa	gagagagagg	840
aaagaagaaa	aagaagaaga	ggtttttgga	agaaatcgat	acctgcttga	tccctactgc	900
aaggatggcg	accaatgtgg	aagcaaacgt	gcaatcagaa	ccgggacaaa	gatgtcggta	960
ggatttgccg	ccccgacctg	aggcgatagg	ccatgatgga	agagggaatc	agcgtaaagtc	1020
cactggcatg	atggccaaga	acataatcat	ggcatcgctg	gctttatctt	tttgctgatg	1080
atcgtttgca	aactctccat	cgaacggata	ccgagggggg	tagcagcttg	tcaaggccta	1140
acaggttggc	cgatatattc	atgaagatat	tgcccatgcg	ggatggtcct	taggtacaga	1200
agggaacaat	cggcttagaa	caggtaactg	atctgtgcca	gcttgcttat	aaggccactt	1260
cgttctgcta	ttttatcaga	ccgagccaca	gagcgagtac	actggtcagt	gcaagggcta	1320
tctaaaggca	ttcttcgact	ggctgaaaga	agcctgcacc	atcgcatcga	atcggacaca	1380
tcgccgaaa	ctatc					1395

(2) INFORMATION FOR SEQ ID NO:39

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 531 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...531

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39

gtgtgctgcc	agagcctgat	cgccgagtcg	cccgacaaaa	aggacggcgt	ggtgaaagag	60
gccgattcga	gtcccatctg	gacggcaacg	gggagtccac	ggagaatagg	cggcggtagg	120
cgcgacggat	atgcattctg	cggcagaggc	gtggcggatc	gctgtccatg	agggctctgcg	180
atagaggaaa	aggacgtggg	gacgagcatc	agcaggcggc	tcaacagggt	ggcatagccc	240
gcaccaggag	tcccatttcg	gggagaccgc	ctttgccgaa	tatcagcagg	tagtcagccc	300
gacattgaag	atattgcccg	atatggtaat	atacatcggg	gtggcgtatc	gctcatgccg	360
tcatagaatt	gcttgaaggc	attgaatacc	gtacgaggaa	gaggccctcc	acctgtaccc	420
aataataggg	gatggcgaga	ggcggagcga	gggtgggagg	ttgaatgtat	cgaacagggg	480
aaccatcacg	ctgccacacc	tgcgaggaag	agtccgatcg	ctntattgag	g	531

(2) INFORMATION FOR SEQ ID NO:40

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 647 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...647

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40

```

ggctctaacc cgaatacgat ccggagacca atagacaatc cacaagacta acaacgaaag      60
gagtgcgtcg atccgaaaga tccggcgcac tctttgtaag attcagattt gactcataaa      120
caatcaatca gcggacttca ttctcttaaa taagtatatt cgcaaaataa ataagctgat      180
tacaagtaaa atcaacttat cttagggttaa agctcaagggt aaattgagta tactctgggt      240
taggagataa ctatttagtt aaagaaaata agaaaaaact tattcacgct aaaaatggca      300
aaaaaattca aaatagaacc tattaacaaa aggcatatga cacacacgaa gcaatggaga      360
aattactcag agaggctgga agagggtatga caaagataaa atcgcagaaa aattaattaa      420
aancaagtgg tatcagaaaag agactgttca gaaattagcc caaatcaaat ttcagcgaga      480
gcaagcacat cccagagatc ttccatcgca aaggcggaaa aatttctcta gttaatagaa      540
tagaacacaa caatcctcat caaaagaagt atcaaaagct cctaaaaaac aaagcagatc      600
cacagaaaaa atatancata gttgaaaaga gctgctaacc aactaaa      647

```

(2) INFORMATION FOR SEQ ID NO:41

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 606 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...606

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41

```

ggcgaaagcc tgaccgattt cttttttgcc aagatggggc tgaacaaggc agtatcgcca      60
cggctgtgga caaactgata gagaaactgc cccatgtacg ggtggcgaac cctatctgtc      120

```

gcatgagacc	aatcaggtgc	tacaggcgcg	gaggacgcag	cgcaccggat	gaaggacaaa	180
tacgtctctt	tggagccatc	gtgctggcta	ttctgactac	gcgatgcgag	gcgtccactc	240
tgctcaggat	gccggagcca	ccgaacagct	tctgcagtcg	gccatcgaag	agctcggaag	300
gggcgcaacg	tgaccagtca	gagtgcggag	gaacagtaca	atgactggag	aaatatgccg	360
tcaatctctg	tcagcgtgct	cgcgatggca	agtggatccc	gtgatcggtc	gcgatgacga	420
gatcaggcga	gtgctgcaaa	tctctctcga	cgcaccaaga	acaatcctat	ccttatcggt	480
gagccggggg	ggcaagacgg	ccatagccga	gggcttggct	tacaggatcg	tgcgtggcgc	540
gtgccggaga	atctgcgcaa	caagcagata	ttctctctcg	acatgggtcc	ttgatcgccg	600
gagcca						606

(2) INFORMATION FOR SEQ ID NO:42

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 999 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...999

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42

aggtgtggaa	gtcgcaggat	ctgaatatct	ttcagattat	ccagcgcaaa	gcaagggact	60
ggttgatatg	atcaacaagt	gggacttggg	ggaagataaa	gtcaagccgt	catcaagacg	120
tttgagaatg	ccatccggca	gcgttttctc	catttacgga	tttccctctt	ctcttcatat	180
cggctatgac	caaacaagga	ttttcaaagt	gttgagagacg	gtcaatcagg	tctatgcaca	240
ccgctgactc	gtattcccac	acacaagctg	aatgaagtga	tgctacccat	tatcaggcta	300
cgccaccacc	tgctaccaaa	ggtaaataca	tcaagataaa	atagtgatgc	agcttccgac	360
ggcagtgcct	tcatttgcct	tttttgccaa	tcgcctcagt	gggtgaaaga	gccttataag	420
cgttttttgg	agaatcagat	tgtgccactc	gggatttttg	cggactccc	atcaacattt	480
ttatccgcga	aagtaggggt	tgccctgtct	caatacgttt	aagtcatcat	agaagaataa	540
atgatatgga	atggaaacgt	tttagatttc	tgaacaatgt	cgtcggttgg	gcgtttttgc	600
agttgcagct	atcgtctatc	tgatgacaat	cagacctcag	ccagcctgtg	ggactgtgcc	660
gagttcatag	tctgcgtaaa	caagttgaga	tcggctcatcc	gcccgagca	cccttcttca	720
tgctcgtcta	taatacatat	cgcatttcc	gagcgatccg	tcacagggtg	catggcttgc	780
caatctacca	gtgcaactgg	cagtgccttt	accatcctgt	ttttgttttg	gacattaccc	840
accttgctcg	ccgcgtactt	gtaccgacag	tacgcaatgt	atcggatttg	aagagccgtc	900
aaggaaaata	tcctttccac	gagtaatcac	gtactcggca	gtggagtcgt	tggagccttg	960
gtctatacgt	tcagcgatac	ttctggttca	gtgccgctcg			999

(2) INFORMATION FOR SEQ ID NO:43

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1241 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1241

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43

```

ggtagaggaa agcctgaaga ataagtcttt gacgttttgc acattggctt ttcttccagc      60
atgtgatcgt cggggttggc ccatgccacg aaagacacgt agtggggccg tcgtattcca      120
atggtatcgg tttgctgtga gccactttgc ggcgtccatc atcagtcggt cgatgcggcg      180
gccggtttcg tcgaaacgaa aataacgacg cgctgcacgg ctccgggttc ggtaatatct      240
tgcattcggc atcccaagcc ctgacggtea ggcgaaacgg acggggacaa tcggatagtc      300
ctctttgata catccgccaa acattccggc cagcagtaag atcgcaccga tacgatatat      360
ttcttagcgt cgttcataac aataattctt tgttggtgat tgggatttcc ctatttgatt      420
tggagagaat gaatacaggg atggagcgaa ccccgctccc tgtattccga tatagacaaa      480
ctatgaaagt ttttagtcgt ttgacgggtc gattaccaag tagcagcctg attaacaaca      540
cccaagggtg aacttggcaa gtaacattca ngttggcttg taccggttag gattttcaag      600
gagtattcgt accgggcccg gtgatgttca gcgaaatttg tantgggttg ttgcgaacga      660
ttttgttttg tccttgggta atagcactga atagatgtag ccattgccat catagtccac      720
caataccgga tagtagtcgt gccatctccg tcgcagaatc cggcatttat agcatccgtc      780
aagggtggtt cgtgagaggg ttgccgtcct tatcgagcag ctttccatag ataaaaggat      840
cgtcggacga agctcgtttg ttgcatcata tttactttcc agacatagaa acccgggcacc      900
tacagcataa ttcgtattca aagacgcctc cattcgtatg tttctcctgc agcatccgga      960
gtgtaaagac cggcaggcgt tggactccat acaaatatgc attagtgttt gagaccaaag     1020
aattgccgaa atcttagaat ctttctttgc gacaagggtc gcgattttag cgtcagctgt     1080
ttaaaagaat agtagttttg atactgtgta gccatattta cctctaccct gcgaatgaga     1140
taccggcatg cacccgagta acggcaagag gaggttcagca gaaacaagggt tgtcggatgc     1200
agtcccacca ggatagccat agtggtggag cccggtttga t                          1241

```

(2) INFORMATION FOR SEQ ID NO:44

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 627 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...627

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44

```

gctcatgcac caaacaatac aactcttcac tctgcttcgg cgtaagcgac ccatatcgaa      60
ccacaactcg ctgacagggc cgtagcccgt gaggatcttc tgacctgacg catattgtat      120

```

tggtgatgtg	ccggagtaat	ccgatcacat	tgtgatcgct	gatcggattg	gcttcgggga	180
aatgccaatc	aataaggaga	agtaaacgcc	gaacttcata	cccgaacgct	cacaagcatc	240
gctcattcct	tcatacacatc	gcgacgcgaa	ggagtggcct	ccactatatt	gaatgagtct	300
cagccgagcc	atacatgcag	aagccatcgt	gatgcttgga	agtaaacacga	tactcttcat	360
ccctgctttc	cgagctaagg	ctactatggc	atggcatccc	atctgtcggg	gcggaaccgc	420
ttggccaccg	gctcgtattg	ctcatgtcgc	gtattccgaa	agagtagatc	tgttcgctat	480
atccgttctt	actggtttgc	cttgccaaac	ccctccaagc	tcactgtaga	agccgtaata	540
atgaaaaggc	tgaatttgtc	acgatgccaa	cgctcgaagc	ttccgaattc	gttgagccac	600
gaggaataga	gacgagaaac	aaacggc				627

(2) INFORMATION FOR SEQ ID NO:45

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 665 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc feature
- (B) LOCATION 1...665

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45

attacaagga	aacctcttga	tcgtaagcgg	atcggcagac	gacaatgtta	tcttcagaac	60
acgatgcttt	ttacagaggc	actggttcag	gccaatatcc	cttcgacatg	gctatctata	120
tggaacagaa	ccatagtata	taccggggga	ataccgcgta	tcactcttat	actcgcaaag	180
caaagttttt	gttcgcacat	tttantacag	nttttctcag	ttgcttgatg	gggcgagtg	240
cgaagggggt	tttgttcaact	tgtccggttc	gacagtggtc	tctaatagct	ctttttgaaa	300
aaactatggc	gcaacacgtc	aagaaacccg	aatgggtgaa	aatcgtcttg	gtgggaatga	360
gaagttttacc	gagactaaaa	gcattgtcga	ggacattgtc	tgcatacgat	ctgtacaagt	420
ggcaaatgcc	ccaatatggg	aagtgcctga	gtagggggac	tgctaccttc	atgatcgggtg	480
gtgatattctg	acacgtgcct	gtcgattttg	caacactttg	acggggcgtc	ccaaaccgcc	540
aatgaagcag	aacctactca	cgtcgcattg	agtatcaaac	tgatgggggt	aaccatgctg	600
tggtgacgag	cgttgaccgc	gatgacttgc	ccgattaggt	gccgcacact	gggttaagac	660
cattc						665

(2) INFORMATION FOR SEQ ID NO:46

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 604 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...604

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46

```

ggatacggcg agctgccgag tggaattcgg cacggggcga cttcggcccg cctatgcacc      60
cgatgcttcg gctctctatt tcacatcgag cagaagcaag acgacggttt ggataatagc      120
agcataacgg gactgaaacc caacgacttt atatcatcaa acgagatgca caaggacgat      180
ggggacgtcc cgataggtgt ccggaggaat caacactcca tgggatgaag gcgtgccaac      240
gatcagcccc atggtagtac catatattat acgttgggcg agcaaggagc cgatacgacc      300
gtacgggtaca gatctattcc gccgctcgga gccgagaagg cggtaggagc acggttcgct      360
cgtggacatt atgcgcgatt cgctccgat ggtgctcacc cctctatgt cggcaatccg      420
gcgattacct gtatttcgtc acaatatagg cggtagctat ggccggcaagg atatttatcg      480
tgtcaagggtg cggatcggtc ttatggttca ccggagaatt tggggcctga tatcaatacc      540
cgggggacga aatgtttccc ttcatagatg ggggattagt acccctttct ttcgcttcgg      600
acgg                                         604

```

(2) INFORMATION FOR SEQ ID NO:47

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 610 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...610

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47

```

ggccggtttgg ctccggactt ccttgtaag gatattgatc agcgatcttc actctttcct      60
ggtatagggg acaagatgtg cttttgctct tcacgaacag cctgactcca ctaccgctac      120
atcattgaaa gtatggagag ataaagagga aagacaaagc cggaaaccct tactctctcg      180
ctctttgcac cggactatct ctccgtaaac tcatcaggaa gttggttttg cccggacgtg      240
tggcacggat agtatcgga caggatcgac acttctcgag cgatatggca tagaagcctt      300
ccatatacta tccacatcga cacagccgga aatatccgta gccccgtgca agctacagtc      360
tccgatagtc ctttcgcacc ctgtttcttt atatgttagt aaagaccttt gccgctgctc      420
tgcacagcat agacgccctt acgttaccgt cgaagtcaat atcacccgag gttgctatct      480
caagtatggg ggactccccg atgcagcagt ccgtgagagt ctggatagga ttcgctccaa      540
tacgactgtc tgaatatcac ctttcccaaa agagcattac gatcaaattc agtcgggcag      600
acattcaaaa                                610

```

(2) INFORMATION FOR SEQ ID NO:48

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 557 base pairs

(B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...557

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48

ggggacacgc atcagtcctgc atagctcggc agagaagggtt tcacgcgctcg gcgaatgccc	60
agcgatccgt ccgaagcgat gaggccggc gccacgcctt ggctgagga tagatgatgg	120
tcacgggttt ggtcgtcagc tcgatcaatc ccaggccaac tccggcactt cgtccatgag	180
gccttgagc ttcgctccga atcgatgaag gaccaagcat gctctngctg tccgctcttt	240
ctttcgccgg taaatccgct ggacggcttc ttcgttcgtg gcacgcgagc ctatccccaa	300
atgggtatctg tcgggtaaag gatgattccg cttttgcgca tgattcggcg gctttcttcg	360
cttcacttct ctgaatatcg ttgagcatat cgtgggtata tctctatttt ttcgagagag	420
ccgagtgcgc tcaactccttc agggcaaaaag tatgaatatc tgccgtatca atgctttaat	480
atgtcatttc tagtcttcat cggttatttc tgtctgtttc tttattttat aaatgatcat	540
tccggccgga gaaaggtt	557

(2) INFORMATION FOR SEQ ID NO:49

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1073 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1073

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49

gcttcgacaa ctgcaatata cagggtacga gtccgggtggc agcctgcgtg ttttcaaaat	60
ggggaaaccg agcaaaaagg attaccgaaa gtttcacgga aaacagtcga agggccgaac	120
gacttcgcct ccatgagaga aatcatcgtc ggcattacac ccgtctgacg gaagagaact	180
taccctacc cgacctatcg tcgtagatgg agggaaagga cagcttagcg cagcgtagca	240
aacatagata aactggggct catcggaag ataccatca taggattggc ccgacgtttg	300
gaggaaatct ttttcccgaa ggaccccggt ccgctgattt tggcaagaaa agcgaaacgc	360
tcaaggtcat acaacacctc cgcgacgaag caaccgcttc gggatcgggt tccaccgcga	420
tgtacgaagt aagaaacaaa tcagagcgaa ctggacaata tcaaaggcat cggttaagaaa	480

acaaaagaag	tctgctccgc	catttcaaaa	gcgtaaagcg	aatacgctcc	gcagaagaga	540
agagcttagt	gctcttatcg	gccggaacaa	agcgaaacta	ttatacgagg	actcagaaaag	600
aaataagaaa	cgatgagagt	agtaatacaa	agagtaagga	ggcatccgtc	agcatcagag	660
gagcattaca	cagccgtata	ggtcaggagt	gctgattctc	gtaggcatag	aagaccgaga	720
cggagagagc	gacatgaact	attaacttcc	aagatctcca	acctgcgtat	cttcgatgac	780
agcgaggggt	gatgaacctt	tccgtcaaag	acatcaatgg	agaagccttg	gtctaagcca	840
atttacactc	atgggatcga	cccggaaagg	gaacagaccc	agtacataaa	agctttcccg	900
tcttgagata	gccatccctc	tctacgagag	ttctgcaaca	gcttgtccgc	aaaactggga	960
aaagctgtca	gacaaggcgt	ttcggagcag	acatgcaggt	cgcattggtg	aacgatgggc	1020
cggtaaccaa	ttgattgaca	cccacaacaa	ggagtagagc	catgttccga	cat	1073

(2) INFORMATION FOR SEQ ID NO:50

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 839 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...839

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50

ggcaaagcgt	tccaagaaac	cgatggcaac	agccggtttg	ttcattttot	atagatgcac	60
cggttttcgc	attgcttctc	ttgcggacag	acacgtccca	caccgccggc	aaagagcttg	120
tctctcgcaa	agtagatgct	gcagccatat	atcgcttact	tctatctgct	tgataaagg	180
cgggatattg	atactccagg	acatccttcc	atacagctcg	gttgccggaca	atcgagacaa	240
cgagagcttc	ggccatagcg	gcctcacggg	acaaaccgcg	attcacctct	tcatgatctt	300
ggagctacga	tagagggggg	cgagttcggg	catttcagcc	cgtgacgcga	catgcgttct	360
ttatttttga	gcgcgttgcg	cagctcctct	ctcatggttc	agagcgacgc	agtcggataa	420
gttctttctg	agtcatgtca	aaaggcagaa	aataagggtta	ttccatctct	cggtatgcgc	480
ccaaacgcac	atcatctcat	cgaaatccac	ttgggtgtgca	tcgaattcgg	ggccatcgaa	540
cagacgaatt	togtctgtcc	tcccacgctt	atacgacaag	ccccacacta	ccggtgccat	600
ccaccataat	tgtattgaga	gaagctatgg	tcggtattcg	taacgttttg	tcaggagaga	660
aacgaacttc	atcatcacag	ccggccgcatc	gtaacgcaga	ggtctaccgt	ttcccgtttg	720
ataacgcttt	ccactcatcc	gttacgaggc	ctttcgtccc	ataagacceca	tcgtctgtca	780
tgatatacct	tcatcgctat	tggctcgcat	tggtcttcag	gataaccaga	tctagttct	839

(2) INFORMATION FOR SEQ ID NO:51

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 628 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...628

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51

tataaaaaag aaaaaagagt ttatggggat accgattatg accgatttgc tttttcacca	60
atcgttttttt acaatcattc aataaggcag ctttcgatac ttttttagct ccagagtaga	120
atatccaaat caaatcaaaa tattattcaa atgtttttta ccaaaatgga gaaattaaaa	180
actgacgtta ttgcattgcc cagatattgg gttagttggg ctcaaccaag ttgcatattt	240
tgcagaaaaag aagaagccga ttcattgaatc tctccaggaa atatctttga agaaaagcta	300
aatttttagt gatgatggag agcagtattt atgcagcaaa gcgggagatg ctctcattgc	360
tcaaattcctc atttttagcag gaagattatc agaattgaag ctccaaaaga ggcattgctt	420
ttcatggaga agaccattac cgagaaatag atttgtctgt tgcaaagaat cttctaattg	480
catacatgcc attctgcaga gaatgagaaa caacgagatt tgaacagcgt taaaaacgag	540
acgcattacc atctgatata aacattgatg acttaacana cacataatct tcatatatgg	600
aaacaaaaaaa attgcaggag ttttgcta	628

(2) INFORMATION FOR SEQ ID NO:52

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 672 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...672

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52

ggctgcaagt atcgcgcccg gatcagtga caacgggtatg gtttcattcc atcgaatgct	60
gttgttttac cgggtcatca gggagacgat ttgggtgggc acagctgatg tattcccgtt	120
tggcagaaag caaactttcg cccaacggct gtgcggtatc ctctactccc acaagcagat	180
gaatcagcag ttcgacggaa gcaaaaggaa cgattactat ccatacaggc aaagctgttt	240
tcctctacga caaggaacaa caacctgctt atcgcacttt cgagcagtat atgcgtggga	300
aaacatccct aagtatatgc tcaacagcca gcaatcatgg cgatcttcgg attagatacg	360
gtttgtatgc ttctcgataa ggaattgctt gatttgcta ctctcttccc ttcgaatacc	420
gctacggaaa gcgtatctat gtgatatttg tctgtgaactg tatggcgaga aaggcatttc	480
tttttcggac atttgaacct gcatggcatt atctcttctc ctgtttaccg actcaaacgt	540
ctctaaagcc tttgcttcga ccatttatac cccgtccttc gatttggaaag gcgatattat	600
cggttttgga acggatcatg caacctgtat taccgacggg agagcaagga cgacgtttcc	660
acccgacatc ta	672

(2) INFORMATION FOR SEQ ID NO:53

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 660 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...660

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53

```

cgagaccatt gcacaaatcc agctcaccaa taccgaacaa gtttccttgg tttttgagca      60
tttagatgtg ttcttcacct tgaatattag tccccagggtg caaaacagac gagaatggtc      120
aaaaacacac cggaacaag ctagcagaag aacagcctct ttgtgcaatg gtctctaaat      180
acgagtatag tccactaggt gcagagaaaa cctgtcgaaa gccggcttta gagagttatt      240
cattatctgc aagcagtact tcggagagag gtttccatcg gtcgctattg gntgccgccca      300
gttaaaagcc ggcgacttaa tgccctgcaa tcggcgtttt cacctaagac aaccaatacc      360
tgatacaccg ggacaaccgg ctcaatatag agctgaacnc tgtactcgga agtccacgaa      420
agtacacatc gctactccct cccccgtacg atggttcagg ctccaaaaat tgccggcttt      480
acagccatga agcgtggcgc gtaatttttt gcgttttggc tcgggaggta aaatttttag      540
cgccaaagcg aaaaaattct cgccccgttt tctcaggatt tacagacca atccgagcat      600
tttcggctcg taatttatcg aagtgcaga ntttaccat taaagatgac gtgtactgaa
660

```

(2) INFORMATION FOR SEQ ID NO:54

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 641 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...641

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54

```

gaggaaccag ctccttttgc ttgatgaacc aaacaaacat aatacgcgta ttaggcggat      60
tatcttcggt tctagatctt ctctatcacc ttcacttgac tagtatcatt agggaaactg      120

```

atatacggcct	cgggagatat	ggcccacggt	accactcgaa	gagatccttg	tagaactggt	180
tcgtcagtg	ctcgacgaga	aagcatcctc	aatatctttg	agttcgatgt	cttggcggtg	240
tttctgtcga	ttaaacttctg	gaagttgtct	gctgctgtac	caaacatgtg	ttgccagggc	300
cgagcaagaa	ggtgaaacgc	ttgctgctgg	taatgtcgga	ctgctcctcc	ccttgtggca	360
gaaggtaaac	cgccattccc	acaaaggatt	gtctcgtagt	ggaatatcat	aaaagcactc	420
gaataggtgt	catgatacgc	cgataatatt	ctggatgcca	accttattgc	gagccatctt	480
gatctggcta	ataccgtgat	gtcaaagatg	ttgataggat	tgaaatccat	atcgatatcc	540
cgatatgctg	atctctagga	tgcccgttgc	ttgtgctgct	ggtcgtagtc	gggtacatct	600
ctaggataga	tcaccatgac	catcctcaaa	tagctctacc	a		641

(2) INFORMATION FOR SEQ ID NO:55

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 674 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...674

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55

gcgcaggatg	tagccctttt	ctccgctctc	atgaaccgcc	ggacggatgg	acgccaccgt	60
tcggccggtt	attttatctc	aaccttaacc	atcgtctcca	tgaaatgtat	cattgccgag	120
aaaccctcgg	tcgcccgcga	catagccgca	tcgtcgggtc	aacgcacaaa	gaagagggct	180
gtttctccgg	aaacggcatg	tggttacctg	ggccttcgga	cacctcgta	cccttgcat	240
gcccagcat	acggctttcc	gacgtacagc	cgcgagcaac	tgcccattat	ccccaacctt	300
tccggtagt	cgtccgacag	atccgcaaa	gaacgacct	tacgacgacc	cgtccgcctt	360
gaagcaactc	aatatcatcc	gcaagtgttt	cgccgaagcg	atcacatcat	cgtccgccacc	420
gacgccggac	gcgaaggcga	gtgatcttcc	gcctgatcta	tgcttatttg	gattgccgca	480
aacctttcga	cgcctgtgga	tcagctccct	caccgataag	gctatcccgt	gagggactgc	540
ccgtccggct	gacggccggc	agtaacgacc	cctttatctc	tcgggcaagc	tcgcagtga	600
gccgacttgg	cttgtcggta	tcaatgccag	ccgggcctct	catcgctcgc	ggaggcgctt	660
attcctggga	agag					674

(2) INFORMATION FOR SEQ ID NO:56

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1930 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1930

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56

gcctatctct	gtgatgacaa	agtcggtact	gactcttttg	tcccaggagt	tgacgttgcg	60
cttgatctca	tccgtaatat	gaggcaccac	ttgcacggct	tgcccaagta	ctcgcccttg	120
cgttccttgc	ggattacgtt	ctgatagtcc	tgccgtgctg	gatattattg	gcacgagtag	180
tgggcgtatt	gaggaacgct	catagtggcc	gagatccaaa	tccggcctcat	gtccgtcctc	240
ggtgaatagc	attcgccgtg	ctcataagga	ttgagcgtac	cgggatcgat	attgtatagg	300
ggtcgaactt	ctgaagagct	acgttgaaac	cgcgagcttg	gagagtttgc	cgagagatgc	360
tgctacgatg	ccttttccaa	gagaagaaac	caaccaccgg	tcacgaagat	atacttagta	420
tctgccatag	cgcgaaaaga	tgtattgttg	atactttgat	cgataaatca	ggggtacgga	480
aagctacccc	aacggaccag	cctcctccga	ttcgtgcgca	aataacaaa	aagaacgccg	540
ctaaaagagg	caaatacgac	agctcttgcc	cgatgcgggc	acatcaaatg	agaaatgagg	600
catccgacga	accgcgataa	ggctatccga	ggcaaattac	gcgcgggaaa	tgctccgatt	660
gcggttcgta	aattctcgaa	aacacggcga	gattttttcc	gttttggttc	gggaaacaaa	720
aaatttacgc	gccaaagcga	aattttctcg	cgccacgttt	ttacgaacga	caatggagcc	780
gatttggaac	cgagacggca	atatgacgag	catgccccac	gagtcgtttt	ttctctcgca	840
ggataaggta	tttccttagc	tggataagaa	ggaaatgaca	ccaccgatto	atagcaaaaa	900
gcatggtttt	cattccgaca	acaaggtgtc	aatgatgagg	gcaaactcga	tcgtaatgct	960
gccggcacgt	tgttcgaatc	gcacctgcga	tcaaagattg	gctgtttggg	aaaaagcata	1020
taaatttgga	ggaaatttca	gagtttcaact	cctaatacta	catcagaaca	tggtgtcttc	1080
atcaatgaag	tttccaggac	gttcggcgaa	tatcttctta	ttcccggctc	actacagaac	1140
agtgcactcc	ccaaaacatc	tctcttcaga	ctcctccatt	aagttcaatc	gcgatgagag	1200
tccccgtatc	aagctgaata	tcccgttggt	tcggccatca	tgacgtcggt	ctccaatgat	1260
acgctggcca	tcgattggca	cgcaacgggg	gactttcggt	tatcttcgga	tcgcagagca	1320
taggagtcag	gccgaaatgg	ttcgtcgtgt	aaagaaattc	aaggccggat	tttcaccagc	1380
gattccaatc	tcagaccgga	caatacgtcg	gccgatgtat	tgatctggtc	aaaaggacag	1440
gacataataa	tataggatat	actcacgacg	ttcgtccaat	ggccgtctga	tggttatcgt	1500
cacgagcaga	gactatcgct	cagcacggag	tcaccctcga	agccgggtcaa	agattttatg	1560
acgccgttga	gagacttacg	gtgggcaagg	tcggtattac	gctgagcgaa	gccaacgtat	1620
tatttgggaa	aacaaactca	atacgttgcc	gatcatcgac	gaaaatagaa	tctgcagtat	1680
ttcgtcttcc	gtaaagatta	cgacagccac	aagaaaatcc	gctcgaactc	tccaactaca	1740
cggacaagac	cctcctcggt	ggtgcggtat	caatacacgc	gactataagg	agcgagtacc	1800
tgcactgggt	gagccgggtg	ggatgtgggt	tgcatcgact	catcggacgg	ctattccgac	1860
tgacagagca	tacgatccgt	tggatcaagg	agaaatacgg	ggacagtttg	tcgtaagtgc	1920
acggaatgtg						1930

(2) INFORMATION FOR SEQ ID NO:57

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 630 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...630

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57

cgaggtagcc	ctgctttgtc	tgtccactca	ttcatatcat	tgagggaagt	ccatcgaaga	60
taggtgtagc	aaatttgaca	ttcatcttgc	gtcccgccag	gcaagtaccg	cttcgaatat	120
ctgtcccagg	ttcatacggg	agggtagcca	agagggttta	ggcatatgtc	taccggagta	180
ccgtctgcga	ggaacgcata	tcctcttgac	gcacgatttt	ggacacaata	cctttatttc	240
catgagtccg	gccatcttgt	cgccaacttg	gatcttccgt	ttcttggcta	tataactttg	300
gccatttgaa	caataccggc	aggcagttcg	tccccgatgg	tctatctaata	ttgcgacgcc	360
gtagttcagc	ttcaatctcc	ttggagtgtc	tcgataattc	accgcaacag	ccttaataca	420
ctcgttcgta	tgtgcatcat	tgtccaatca	cttaattgga	tcacattgaa	atcaagagct	480
tcaagatctt	tttggcgaat	ttgctgcccg	ccttaataca	ctcaacattc	aagtagtctt	540
tacgccacag	caggttttgc	ctttggtcaa	gttctggtag	cttgctcgaca	gacgcttcat	600
gaagtgggtgc	tgctttttcg	cgtatgtttc				630

(2) INFORMATION FOR SEQ ID NO:58

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1119 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...1119

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58

gcaaaactctg	aatgatccgt	ccgcacatag	caccgatgta	ggtacgtcgt	gtccacgaat	60
ctcagcttcg	tcatgcaagc	cccctaaaga	aatgcgtagt	atttacgacc	caagctctcg	120
gcaatgctct	tgccaagaga	ggctttacca	ctcccggagg	gccgtacaga	cagatgatgg	180
gcgacttcat	atcgcttca	tcttgaggac	agccagatgc	tctatgattc	tctcttttac	240
tttctaagac	cgaaatgatc	tctatccaaa	acggattggg	cacgcttcag	gttgaattat	300
atcttacact	gaaatacgcc	ccacggcaga	ctgatgatgg	tcttacatac	tgcatctgta	360
cggagtagtc	gggcgattga	ggatgtagcc	gtccagcttg	cggagttctt	tttcgaaagt	420
ttctgctacc	tcgctgctcc	attcatcgta	gcagcttttg	tacgcagctc	ctgcacctcg	480
atgtcgttta	attgccaccc	agttcctcct	gaatcgtctt	gatttgctgc	tgagggaaga	540
ctctttctgc	tgtttgtcca	tctcctcgcg	cgtcttcate	tgaatagagc	tttcagttcc	600
attacctgaa	gctccttgtg	caacaggtag	agaagacata	gccacgatcc	ttcatcttgc	660
tgatttccag	caattcttgc	ttgacgctat	gctcgtggat	atattggccg	atgcaaagtt	720
gatctgatac	atcggttctt	gttcgctctc	atcgagagga	taagctcccg	aggggggtctc	780
tcgacatcag	ctccatcacc	ttcagactca	tatcctgtat	ggtggagacg	agtcttcgaa	840
ctcgtgatct	ttgtttctcc	cgggggagaat	gtctgggagc	agttcacgcg	acccttcata	900
aaaggttccg	tagccgttat	ctcctgcagt	gaaatcgctg	gcggccttgt	acgatagccg	960
tggtagtacc	atcggggcatc	ccagcaccct	gatgatttca	gccacgaccc	cgacatcata	1020
caaatcgggc	gaatcgggtc	cttcacatcc	atattgcgct	gtgaaacggc	accgaaatga	1080
caccttctct	ctcacgtagc	cggatcactt	gagtgtattt			1119

(2) INFORMATION FOR SEQ ID NO:59

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 454 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...454

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59

catccccggc aatcccagcc acatatacca gaacataggg gctacaactc atcgctcaga	60
ttctccgaca aagtctccaa agctgccgtc ctgacttctg cgccgacaga gcagccgtat	120
cgcgccctac gattcgcgtc acctgttgcg cccttcttca agcgaacgat cgactgcttc	180
gaataccata cgtactcacg aataagggtg gtacctgcca aacagaagaa aatggccgat	240
agccaaataa gagaagccac agcaaatgca acagcaatcc ggaaaaaatc gtccgcaaaa	300
tggtataaac acagacaaaa acaagtccca agaggatcaa taggtcaaaa gaaaaacggc	360
aacgatatag aacaccgaca tgaaggcgcc ttcacctgcy gtagtttctt ttattcaatc	420
tttctctccg atgcaatcat ggaccgaagc cgac	454

(2) INFORMATION FOR SEQ ID NO:60

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 982 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...982

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60

ccgtcatgct tgatggagag cgtatcggtg tggatgtact caataccatt acgacgtatg	60
taaggctctg attgacaatt atgcagaagc caatgattcg aaggcttcaa ggaagatctg	120
atgcgtgcac tcgcataga atctccttca cgcaagaaat attcagaggt aagaaagcag	180
aagagctgac cgatatcttt tcgatgaagc ttacaagtct ttccaacgta agatggatct	240
gatcgagaag tggcccaccc tgtggttcat cagggtattcg agaccaagc cgctgtacg	300
agcgcattct aatccccatt acggatggta aacgtgtcta taaataggat gcaatttgcy	360

tgaagcggat	gaaactcaag	ggaaaagcat	cacaaaagaat	ttgagaaagc	tatcgactg	420
catactatcg	atgagtcttg	gaagaacatc	tgcgtgagat	ggacgagctt	cgtaattccg	480
ttcagaatgc	agctacgaaa	acaaagatcc	actacttatc	tataaaactcg	aatcttacga	540
ctgttccgca	agatggtaga	agccatgaac	cgtaagaccg	tagcgatcta	atgcgtgctc	600
ggataccggg	accggaaggct	ccttcccaag	aagagctgaa	cacaggcggc	aaatagaaat	660
ccgacatgca	gccgaacaac	gtacggcatg	agtaagtatc	ggacacaaaa	agacgatata	720
gaagcccagc	agaaacacaa	agggatgcgg	caagcagacc	tcagggtgca	gctgctcccc	780
agacccgata	agaaacgaga	ataagatcgg	gcgaaacgat	ccttgtcctt	gcgtagtggc	840
aaaaagttca	aacagtgcc	cgggcgtaac	ctgtaaaaag	attatgagag	aatcaccgac	900
tatgggtatag	aatagtctgn	gattctcttt	tattttttct	ctctaccgcg	atataaaaaa	960
gactatgatc	ctatctatga	cg				982

(2) INFORMATION FOR SEQ ID NO:61

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1317 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1317

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61

tcactctcca	cttcgagcat	attgcccgcg	aagtgtccca	cctgctccga	ctaattggcta	60
tgatgcggtg	tccgttagcg	gtcaggctat	tcaccaccta	ctgcgctcgg	cttcgtccct	120
gatgcactcc	aaacaaacga	tcgcatacgc	gaagccacac	acatcatcac	attgggtatga	180
tagatgggag	caccatcgca	tctgtggcgg	taaaaatcaa	tcctttgtag	tccaattccc	240
gacaaattcc	tctaatacct	tcggattggg	acgttcggaa	gagcagcagt	aagcatacga	300
ttgaccctgt	ccaataccat	actgcccggt	ccttcgagaa	aacattgtcc	cgctcgtagc	360
cggagagatt	gatgatacga	tccaccctt	cctttcacca	acagtagcca	gtacggggcaa	420
tttccgctct	tgctgcctgt	tggtgcatac	atgggataaa	gcaccaatcc	gcctgtgaca	480
tgctgtctga	ccaattgttc	gggaatatcg	aatccgggtg	atgaggtgtc	ttcgaatccg	540
aatgacccat	acatctaccc	cgtattcgcg	caatagattg	acgtagtttc	aaactctttt	600
ttcgttccc	ttgctactgc	ttcgggtact	cccgtttttt	ctggaagctg	ttgtttctgg	660
ccgtttcggc	attaaatcca	aaaagaccgg	gcgcaccatc	agcaccgggt	tcgtggcctg	720
cttgcgaaata	agagcatgaa	tggttactct	aaaaccttga	tggattcctt	gataatctcc	780
acggttgccg	cagctcctca	cgtgtgatac	aaagtggcgg	agccaagcga	atgtatggcg	840
atgcgtcggg	ttggccagaa	ggccgcggtc	ggccattgcc	tccacacgtc	ccatgcctcg	900
tgtctattgt	gcgggttcgat	gacaatagca	tgagcatacc	tcgtccgcgg	accaactcca	960
atagagggtc	cttgattttg	gcaactctcc	tctgaaatac	tgcccagct	cctcggtctc	1020
ctccggcaac	gttcttcttt	taccaccgta	agggcagcca	tcgccacttt	gcaggcaagg	1080
ggaatccccc	gaaagtggaa	ccatgctcgc	ccggcttgat	cgtaagctaa	cctcatcgtc	1140
tgccaatacg	caacttaccg	gcaatacccc	gccggaatag	ctttaccgag	cacaacaata	1200
tcgggacgaa	cgatcatcatg	atcgcgagca	gcattccgtcc	cgttcgtgog	ataccgggtc	1260
gcacttcata	agcccaaaga	gggcatggta	cttgccggcaa	agctctgcag	cacgacg	1317

(2) INFORMATION FOR SEQ ID NO:62

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 502 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...502

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62

```

gcccttcctt attttggag ggatggtacc ctaccctcct gtaaagacat gcatataacg      60
agtgtgaagc tggtcggcag tatgctcttc tatgtgtcgt agagtgaacg catctcctgc      120
ataaaagagc ggaatatctc tatacgacta ccgaatgccc cagaatgatc cggaccgatg      180
taggattggg gagatactcg gatagtcgct ttcgttgata ttgagaccga caccagaat      240
gctgtgtcga ggttgctgcc cgtcaggctg tgctcgatca gtatgcctgc tatttcccgg      300
tctccatagt atatatcggt cggccatttg atgctgagca tctggcagaa ggaagaaggt      360
cgtagagtgt atggagcacg gagagtgcac acatcgggag agatcgaatt gctgctgtgc      420
aggaagcatg gtcggcctca gagaacggaa aaggtcagggt tcaagcccgg agacgcgaac      480
cagctattgc ctgctgtcct cg                                     502

```

(2) INFORMATION FOR SEQ ID NO:63

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 674 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...674

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:63

```

ggaaaacagt cggctgtacg cttccacctc cgccacgtcc gcacacaggg gatctgatcg      60
gaaggatgac gggcaaactg atgatgaagc cggaagagtt tcttccctgt tggccgactc      120
cgctttctgc gattcgctgg gattcgacca cactccatcc gcagcctttt tctgcccga      180
acatacgaag tggattggac attaggccaa aggacttggt tctgaggctg aaagagatac      240
tacgacgcta ttggacagca gacgcagcga gtctggccga ctcattgggg ctgagccgat      300
ccaagtatcc attatcgcat ccctcgtgga ggaggagtcg ggaaatccga tgaatacccg      360
cagatagccg gtctctatat ccgtcgcttg cggaggggat gctcttgacg gccgatccga      420

```

```

cggatgaagtt tgcgatggga gcttttccat ccgtaggata ctgaatgtcc atttgcagac      480
ggattccccg acaacactta taaaaacgaa ggactgcctn cgggcccgat ccggctaccc      540
ataccgcgac catggacagc gtgctccgag cggatcgga tggetaccgt atatgtgtgc      600
caaggaggac ttctccggcc gtcaccgttt tgcccaccct atgccgaaca ccaacgcaat      660
gcggtttctc tacc

```

(2) INFORMATION FOR SEQ ID NO:64

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 789 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...789

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64

```

ccttcttggc atggccggct ttggacacgg gcttcacgat gttctcgatt ggtagatcgg      60
ataagagacg cgagtattct ccgtcacgga tttgtcacga agtcgatctt accggcagca      120
tccacggcca cgttctccag cagcgcacgc gacgaatggc attgtagatg tccgggttcgt      180
tctcgccggt caggttatca ccttggcgta gcacccgct tcgaagttga agataccgtc      240
cttgctccagc cgtgctcgtc atcgccgatc agcttgccgt tcggatccgt actggcgtgg      300
tcttgcccggt accggacaga ccgaagaaga tagccgtctc ctttcgtcca tgctcgtatt      360
ggcggagcag tgcatcgaag ccataccgcy caaggagca ggtagttcat gtaggagAAC      420
atacctttct tcatctcacc gcgtaccatg tggtcaggat cacttgccc ttctcggcca      480
ggttgaatac acggccgtct cggagttcag tcccagctct ttgtagtttt ccaccttcgt      540
ttggaagcag tcatcaccac gaagtcgggc tcgccgtagt tggccagccc tcttcggtgg      600
ggcggataaa catattcttg acgaagtggg cctgccagcc acctccatga taaagcggat      660
tttcaaccga gagctttcgt tggcgcgcag aacgtgtcca cgacgaaaag acgcttgccg      720
gagagctgct ccacgccagc tttttgatac tcttcacgc cttcggagtc accggtttgg      780
tgtcttctt

```

(2) INFORMATION FOR SEQ ID NO:65

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 685 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...685

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65

```

gccgtctggt tgaaaagggc aagatgtctg ccgatgagca gcaagccgta tggctcgtat      60
ccgtacgacg atggacttca atgacctgaa agatgccgta tcgtgattga agcgattgcc      120
gaagaaatgg aaataaagaa acaggcctca gtgctgtggc ggaagtggta agcgagcaat      180
gtatcatcgc taccaaacat cttcattgag tatcacagct ttggcaaccc gaactcccta      240
ccccactcgt gtgatcgga tgcacttctt caatcccgtt cccgtgatga aactgtagaa      300
gttatcagtg cccagcaaac ttcggaacga gtgatgaagc aggactggac ttgtgcgaaa      360
tgctcaagaa aacagccgta cgcgtgaacg aactccgggt ttcgtcgtaa accgtcttct      420
cataccgatg atcaacgaag gatcggagcc tatgcccgac ggtgtggcca gcatagagga      480
aatagatcag ccatgatgct cgggtccaat caccgatgg gccctttggc tttgggcgat      540
ttatcggttt ggatgtctgt ctggctatca tggaggatt attcaccgat tggatgatgc      600
aatatcgtc ctcatccttt gcttcgcaag atggtcggca ggacagcttg gccgaagacc      660
ggcaaagctt ctacgactat agcaa

```

(2) INFORMATION FOR SEQ ID NO:66

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 616 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...616

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:66

```

tcttccaaca atttgatat gatcatgcc atgaagctgg ccgcctttcc ggcaaagctt      60
ggcgttcgga tgctacagca gtgaaagcaa ccgacataac gaaagtgcga cagtagatgg      120
agctcgaatc atgggtacgg ataccgggtc atagctccgg gacgcttggc agatctgtgt      180
ctgatacgtc tggacacccc gaaaatgact ccctgtcaca acttcatatc caacttggtt      240
tattcgccaa tagcagtgc gtggatacga ctattgtaga tgggaagatc ctgagcgcgg      300
acgtaaagta cccggagagg aagccatatt ggccggcgca gctaagctgc atacaaactg      360
atggcaaagg cccacaaaac acacgaatga aatataagca taccgcatat gaaactccaa      420
gaacagcatt accacgaggg acatctttcc tgctctctcg tctaccgggc gatgccaaaa      480
cggctataat ctgggtagcg gcttaggcga actggccgaa aaaatcgaaa acaagaccgc      540
atcccctaca atgagatacc tcatttcgcc caagctacgg ctgtagggac aagggttaata      600
tcacggaggg aatctt

```

(2) INFORMATION FOR SEQ ID NO:67

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 710 base pairs
- (B) TYPE: nucleic acid

(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...710

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:67

tcaactatcg	tccggattcg	tacgtttctca	ttcctcgcgc	tttgtacgag	agggtagagc	60
cgactattgg	ctgaggactg	ccatccacct	gccggacgag	gcaagggcgt	agccgtcatg	120
gagtacaacc	tgctcatca	ggataagtgc	tgattttggc	ttgggacaaa	gcctcttcta	180
tgaattncta	agaaggcaca	gatcggaaca	gagttcaccc	ccggctttat	cccccttttc	240
aaagaacgga	gcgacagagc	aggcaacata	cggccaaaag	agttgccctc	aatcccggca	300
tgacaaaactc	gacctcttcg	tattcgaagg	aggtagtctg	ctcttgccaa	tacatacagc	360
ttcacggaca	atcaaggcgt	tcgctccatc	gagagggaagt	ccttttctat	ctggtcaccg	420
tctggaagag	cttacggttg	gtatagagca	tgaccgtatc	gttatctgta	tccaacaaaa	480
tatccgcgac	actctgtcgg	aaaagatgat	ctcaggcaaa	tattggagcc	gttcttccgc	540
atatcgaaact	gtgcaaagag	ccggtgtaac	gccatattcg	aactctctct	ccacttcttc	600
ccctatgcgt	gtaatcagag	gtaaatacgg	acacagggtt	tcgatgtacc	caaaagcttc	660
aatgcccgtc	ctacaacgga	ttttgcaaag	agaacctctt	caacatccta		710

(2) INFORMATION FOR SEQ ID NO:68

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 489 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...489

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:68

ccgaatttgt	gaaaataaat	gattgcagta	tgaaaaacaa	tttttacaga	gaagcttatt	60
ggcaatgagc	gtttttttcc	tcggcgcatg	tgctcttttg	gacagaaaaa	cagtgataag	120
caggatgata	cgatcttgct	ttatcctttg	ggactacatg	gtattaccac	acaagtgaaa	180
aaacgagtat	ggactccctt	cgtatttcgg	gtatatccgc	catcgtgtcg	agaagaatat	240
ccaaaaggcg	aataccaagc	tcaagagatt	ccagtgggtc	aataaagatt	ggacggctct	300
gagaccccgga	tggagccttt	ttacctatat	agaaaaggag	gtaggcctat	gttgtagagt	360
ctgacggcct	gcgactgctc	tatgatctca	cacagagggt	ggcgacgtta	tacccttcc	420

cgtaaccaa ggtacagtcg tgagggtttt tctcatggga cgacaacggt cattgaaaaa 480
 tccacaatc 489

(2) INFORMATION FOR SEQ ID NO:69

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 656 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...656

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:69

```

ggcaaacgta ccgcacctga ccaagaggag tccgcatggt ctgagacacg cttcgccacc      60
gaaatgctca accacggagc agatctgata tcggtcaaga acttttaggg cacgacagcc      120
tttctacgac ggtgcaatac acgcatattc gttcgaacaa cttagacaga tgtataacgc      180
tcatccaagg gcaaaaaaga aacgaccatg acagatgtaa gaatccaagc tctgcatttc      240
gatgcaccga ccaactgaaa gattttgtac agaagaaaat atccaagctg aatccttgtc      300
cgatggaata acgggagccg aagtcgtcct caagctcgctc aagctgagac cgtacaaaac      360
aaagaagcat ctatcaggct ctatatcccc gggacgactt gttcgcgga aagatagcag      420
acacctttga ggaagctatt gtctgacagt cgatgcactg aaaagacaga tcgaaaaaag      480
gaaagaacag gaaaatagga caaagaccaa aaagattcgt cgaatgtttg gcgaattaga      540
aatgtcacta aatttgcacg cgattcgctt tcccttaatc cgcatgagct aagctgtgat      600
tttagcggta ataagtcagg caccggaacg cgaggggagt taccagagtg gccaaa      656

```

(2) INFORMATION FOR SEQ ID NO:70

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 593 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...593

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:70

```

agaccagccg agccgaaaact cctctgcata gtgcttgaaa atggtatcga ctgcgatata      60
ctccctttcc tcagcttgat gcgaggtcgg ggagcggatg ctccctcttcg acctcatcgt      120
cgctcttgct catctcgaag tatcgctctg tatggctcgg tacgattcct tgcgggggat      180
ggattccccc catcggtcac ccaccgcgcc agacaatgat tgccttgcg gacgatccat      240
tgcagctttg tccgaagcct actttcaaac tgatgtctat attgcggtag taggtccngn      300
ccantcgtgc caactgttca tcggcaaagg tgtagtctat ttccctttgg ctacctgcgt      360
gatcaggtct tcggtcgtga gggatatctc gcgaggatca gcgaatcgat acctcccccc      420
acttcttcgt tcaggtgccg ggccgatcgg catagcgagt atgtgccatg actgtaacgg      480
gcttgccgat agatctgtta cgttcgttat acgtggattg ccgtcgtgc gttgcacccat      540
acttgccccg atatttcttc gggaccaacg aagagatact tctgcttacc ttg      593

```

(2) INFORMATION FOR SEQ ID NO:71

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 540 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...540
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:71

```

ggactgttga tgcagtcgat gatgaaaacc taaacggacg aataatagaa atttttaccc      60
caatgatact cttggccccg aatcggaaga gaaactaaaa gggtgggggt ttactctcc      120
aaagcctccg aagatttcga tcttcgcaaa ccaatgaaat atccatcgac ttaactgttt      180
tcaaagattt ggctgttcaa tcaccgaaaa gcattgtaat ttatacggtg agacaatctc      240
atacgtgaaa aaatgacact gaaaaaggga gacttaatga ccaagccatt tttcaaagnc      300
tttnttaggg taaaagaata agagcatggc aaagcgaata atccgaggat aggagacgtt      360
tttgaagtcc aattagataa ttgcaagaag tatttcagta catcgcaaat gacatgacac      420
agctcaacag tagcgtaata ctacttttgt ggaagaatac cccttggaact gttctccgat      480
cttagaaaat ttaccgcggg gtaagggtga ttttatgcac atacagtcct ccgatgggga
540

```

(2) INFORMATION FOR SEQ ID NO:72

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 588 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...588

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:72

```

gagaatgatg cacgccgtgc catcgaagag ctgttcgatc aggaattcca ggtcgcaagc      60
tgatcgctcaa agaggcattg gaacgtcccg agcgtgctct cgccgtactt tccgacacga      120
agatcgctat tgatccttct cccacttcgg caagtcgtac cacaacgccg atacggcttt      180
ccctctgaga ggtcttctct attattctaa cgacacgaat tacaagacag gccgcaggca      240
caccacatac ggtgttcacc tgcggccttc ttgcatctgc ttgtaccatg acagccttgt      300
cacaaccat cccaaccgca actatatacg gctctcaccg aacttccacc cccccgaact      360
tgccatccgc cacagagcag atagcatctt cctcaataga ccatagtatc ctctcatgtg      420
agaccatagt atcctctcat agagaccata gtatcctctc ataggagacc atagtatcct      480
ctcgtatgag ccatagtatc ctctcatagt agaccatagt atctctcgta tgagaccatg      540
tatctcttcg tatgagacca tagtatcctc tcataggaga ccatagta.                    588

```

(2) INFORMATION FOR SEQ ID NO:73

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 646 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...646

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:73

```

ggacttatgt gttgaacgaa agcttcgata cgcaaacgct tcctaacggt ggacaatgat      60
cgatgctgat ggtgatggtc acaattggct atctacaaaa acgtttacaa cactgctact      120
catacagggtg acggtgctat gtttagcaat catggacagc tagcagtggg gcaaaaattg      180
at ttgagtc tgacaatatt tggtaactcc taagt ttacg gttcctgaga atggtaaact      240
ttcttttggg ttctatctca agagccttgg actaatgagc attatggagt gttctgtcca      300
caaccggaaa cgaggctgca aactttacga taaagctgct ggagaaaccc tcggatccgg      360
caaacctgct ccgatgaact tggatgaagag tgaggagtaa aggctccggc accttatcag      420
gaaagaacca tcgatctctc tcctatgccg gacaacaggt gtacttggca ttccgtcatt      480
tcggctgtac ggtatatctc gtctttatct tgatgacgtg gctgtttctg gtgaagggtt      540
tccaacgact acacgtacac ggtatatcgt gacaatgttg ttatcgccag aatctcacgg      600
caacgacatt caatcaggaa aatgtagctc cggccagaca actact                      646

```

(2) INFORMATION FOR SEQ ID NO:74

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 700 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...700

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:74

gggtgtataa	gttaatgctt	cctttgtaaa	atttgaagtt	gttataaagt	cccttttttg	60
gcaccttgtc	cagcgagtgc	tccaacaaac	ttttgaagtc	aggtcttcct	accacattcc	120
caggcctcca	gcgcttggt	tgatataat	aatatcaagt	cccagtttat	cttcttttat	180
tggtccgtca	attccccgtc	tccacttttg	cctaagtctt	taccggcatc	cttgatagaa	240
cctcctatcc	cattttgact	aataattcga	caacaagcct	ctcaaaaaaa	gcagtgaaag	300
gtcaatgact	ttattaagta	attcggaagc	caatgatttt	ctgttctttg	atatgctttg	360
tcaaggacct	cttcagggtg	ttgttcgtgt	atctttctgt	tatggattct	tcttctgttt	420
cgccgtcatt	tcgataaccg	tctgaaatc	tataaacgcc	ggaaaccgtc	ttaggtattt	480
tgtgtctatt	ttgggggatt	cttcgaaagt	atctctctgc	caaggtcaga	aattataaga	540
tcgctcgttt	aggcgaaatc	agaaggccag	ccttcttttag	gtatgttctg	cccagccaac	600
gcgattgtca	aaaacagctt	tgagaccact	tgccaaggtt	cctgcgttct	tcgtccgtga	660
cctcaaatcg	gctgccaatg	ttcgatatat	ctctggattt			700

(2) INFORMATION FOR SEQ ID NO:75

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 574 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...574

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:75

cggcaacgct	tttcatcgta	ttagggacgc	tgaccaaact	gtatggtatg	ttggcttggc	60
tttcttcccc	tttgtgaaaa	gaaaaggccg	ctatttggtt	ggctttttgc	atggttcggt	120
ctgatcggtg	tcttgccgat	gttggttgag	gaggttctta	tgcccttgag	cagtatatga	180
attggtttgc	tagcctggca	cgaagaatgg	ggagaatctg	ttctccctgt	atcaaaacgt	240
ttcccgtctg	ggatggttag	gaaaatgacc	ggtattgccg	gctactccga	cttgtgttgt	300
tagtccccgg	acttatccct	ttcgtctctt	ctttcctccg	attagtcagt	acaaggctcc	360
actctttcgg	atgagcatat	tggcttcgac	tcgcttttca	ccgtttttatt	cagtaccggt	420

```

agcgaatcga gtacttatat ctagcggttgt tgggtgtcgg tatctgggtc atacatcgcc 480
ccaaaggga cccgaccggc tggatattac actcttagtc ggaacactat tcctctcctt 540
ttatcgccga ccgatctgtc cctgcggctc ttcg 574

```

(2) INFORMATION FOR SEQ ID NO:76

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 629 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...629

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:76

```

gactctaccg cgaaactata gacttttacc ccattcatat cgtataaaga gcttcctgcc 60
ctaaaagaga ctcggggatc tcgacgagcg catatcttct accggattgg gatataatcct 120
gacagtggga gcatctactg ccaagttgat gtcggacttc cttcgtatgg aagcatattg 180
tcagaatcac cgttgagtc aatactcgcc agttcttact tttagctttt tccacatcct 240
ttacgtacag atattcttct catcagtgtc cttgaggtgt tcnaaacgac gaaattgctc 300
tgagcgccctg cgccgggaga tagtggtggc aaagcattca ccatttcgtc atttcttcac 360
ctgogatctg attggaatga caaaccaaaa catcagtcctt ttcacccccg acagattcaa 420
ggatgtaagt ttgttcgatg acaccaaaagg taagcaacgt ccgaattctt ggaaagatcc 480
aaggtcgaaa ctcattgtac ctgcacaaa gtgttaccaa tagaggattg gcactcagac 540
gagtttcgtg atccgattac cgaagcacca aagatcattg agacgagggtt ggcactgagt 600
tccaacttcg tcagggttata tcagaacac 629

```

(2) INFORMATION FOR SEQ ID NO:77

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 647 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...647

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:77

caatattaaa	cacatcctta	cgaccaaacc	aagcctcatc	gatcagattt	tctgagcggt	60
gcaaacccaa	gagggggtga	atacttctgc	tttatcctgg	tgcggttgge	ttgttcttcc	120
ttggacttca	gcactctggg	ctgtattcag	tgtcatgctc	ccctgtaatg	ctgtcagtcg	180
taattgggtgc	atcgtattgg	tacgcattct	ccagtgtagt	atagtcattct	gtagcccaaa	240
agatatcctc	tgagtcgtat	ggtcaaagag	gagtctttgc	agaagtcctt	cggatgacgc	300
agtagttcat	tctcactaat	gtcgaccccc	atcttcatat	cgccacgagt	aacctctttg	360
catttgacaa	gcagtgggtg	tcaaattact	gttaccatat	agaattgcca	ttttgggcac	420
agattagaaa	taggcacgac	aatctgcccc	tactcttagc	caccgggttg	ggacatcacc	480
aggaaaaagg	cctcggtctt	ttatcgtttt	atctaaactc	attacataag	caaaggtaca	540
agttaggggc	atactaacga	agggaaatgg	atatttcttt	accgagtaat	caaagtgcaa	600
cagatgggat	aaacagcaga	gatttcgggg	cattcggttg	ggctttt		647

(2) INFORMATION FOR SEQ ID NO:78

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 450 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...450

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78

tttcagcaaa	agccggatag	agatctgtcc	actcttcatt	ttcaccggcn	ccgccgcgcg	60
caagttctca	gccgtggaac	cgattattcc	tgcaggaaaag	aagccgttat	ctcaagcatg	120
ccgccttcca	agaaaagaaa	aaacctttgg	catgctcttt	ttcctgctca	gcggtttcca	180
tgaaaaactcc	ggcaattggt	cataaccctc	tttcttgcca	acacttgcaa	agaaagtata	240
gcgcgccgag	cttgcgattc	tccggcaaat	gccatgagca	aatgcttttc	tgtcttgagc	300
ctttaatact	cttattcatt	tctgttttct	ttttaatcga	catacgagag	tccgactctc	360
atcacaaaaa	taggtactac	cactcaataa	aaaagaaaaa	caaggataaa	tataacctaca	420
gataggtcct	cgtatctttt	taagcccaaa				450

(2) INFORMATION FOR SEQ ID NO:79

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 543 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...543

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79

```

gcctgttcgg actacgagtg ggaggggata catatccctt tagtgtggag agtacaagcg      60
gcctacattc gaagtcggcc tccggagtc cgaagctgat atgctatggg cgacaccctc      120
cgcatacgag gcgaagccaa gacctttccg gaatcggtat gcgaggagct acggtgaact      180
atcggtctgag cctgaccctt atacgcgttg gttgggtggg tagacctgtg gccgataggg      240
tcgtaagacc ggtgaggcag tggtagatga atcgggggtac ttcgtcatac ctgttcgctg      300
tctcgccggg aaggacggga agactattcc tactgcctct acagctatcg gtggatgtga      360
ccgccccggg tggcgagacg caggccggcg tatccgaata cccgtgggaa aagaacccaa      420
gaggggtggac gtcgaagtgg gaaatacatt cgtgccaaac aagacaactg gcttgccacc      480
tctctgccgg tctgacattc tcccttacca atacttttcc ggacagacgg tggagggatc      540
atc

```

(2) INFORMATION FOR SEQ ID NO:80

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 671 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...671

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:80

```

gcaaacctcc gacaaagaac tgcattctgca caatgtgaaa ctggctatgc aaggggtggag      60
cgacatagct ccattaccct cagttcgccct ttccttgagg agcactgcat ggcgagttca      120
cattgtccaa gctgccttcg atgctcgagg agtggttggc gcacatcttc ctgcacttgc      180
gggccatagg tcgcagcaag agtgccgact gaggatgtcc gtctgcgttt ggcgttggac      240
ggctcttgcc caaggaagtg tgcagcttct tccggttgcc tttggccgaa gcggttctat      300
caagatcagg gcagcctatt ccgaattgct tcgaagcctc gattgcacat tcgtaccgac      360
aggctcatga ctatgaacaa agagctacgg gaacggaggt gaccttgaa tcattccaccg      420
gcaaggccga actcatctgt cgtccgactt gtagtgtaat ggcgatgcca cgacacgaga      480
cctcaacctg aagcatcagt ggcaaacgac agcatccgtg cccgactgga tatgggacag      540
acaagcgagg agcgaaaaac ggatttatat cgctgctcac aaacttcctc gggacgagga      600
ctcatcgctg aatactcata tcggtctcga tcgctctcgg cacgcacatcg cggtatgagt      660
ggcagatagc c

```

(2) INFORMATION FOR SEQ ID NO:81

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 999 base pairs

- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...999

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:81

```

agtcctatca gatccgacat ttatgttttc ggaacggtatc cgatgagtat tttatcggat      60
atccggggct ctectcttct tctttttgta cccacatcac tttttctacg cgagttctttg      120
cacatctacg gctcgtgttt ttcggaaaag tggcgcgaga tttttttcgt tctggcgcggt      180
aaaaatttta cttctccgcc aaaagcaaaa ttttcccgcg ccacgttttc cgagacatga      240
ataaaaaatt ttccgaacgc aaacaatctg aacggacagt ttgccatgta ctgaaaagtc      300
gttgacacac ggaaagggtg tgaagatcga tttccggctc tgcgatctc cctttccac      360
taatccgaca gatactgatg cccgcttacc caaaaaaga gggagaaaaa cgcttgtaca      420
actaaaaaaa gatactacct tgcctcgcaa tcgcggaagt agctcagttg gtagagcata      480
accttgccaa gttagggtcg cgggttcgag tcccgctctc cgctccaaga ggcagtagga      540
tgcggcctat ggcggtctcc tcctcctgaa aaagggtgta tctttccaga aagatcggtc      600
gataacatag acgcccgggt ggcggaattg gtagacggct cgtttcaggt gcgagtgttc      660
aaaagacgtg caggttcgat tctgtccgg gcaccgacta tcgaggaaaa gacaaacaat      720
ttttttgcgc ggggtggaat ttggtagaca cgctactttg agggggtagt gccggttacg      780
gtgttgagtt caaatctcat ctgcgctact tttaatgaag aggatgttca ttcattgggc      840
atcctctttt tttgttttaa ggaagggtgcc caatggcggtg aacggtataa atagatatct      900
ttaatctttg tataataaaa aacaggcgaga agaagcagca ggaaagcgag catcccacaa      960
gtggcggaagc catcatcatc aaggggcacg ggtcaataa      999

```

(2) INFORMATION FOR SEQ ID NO:82

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 548 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...548

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:82

```

ccgaatccaa agtctcaagc tctgcaatga ttgctttctt gctcttcagt tttcgcatc      60

```


ttcggagcgc	atatctccct	gttcggcttt	tttacgttga	agaatgcac	gcacgcagtc	120
gtaaaacgct	tccatatctc	atcactaacc	gatgaggaac	ggctccgatg	gttttccatt	180
tcttttggag	ttcggcaagc	gagtagaggt	ttctttccag	tcggaactct	cctgaaggct	240
ctccgttctt	ctaccatggc	cagctttctt	ttgtagttat	cggtcagctc	ttcagtttgc	300
ctttgaagaa	agctgttttc	ttattgaaat	aatcgtcaca	tgcgcgcgga	aacgctcgta	360
gatctttctc	ttgtcgcttc	tgcgagcata	gctatagtct	tccacttggc	ctgaatctct	420
agtacggcct	tcgtttgctc	gccattttgg	ccagcgagtt	cagaccggag	gtatctatcg	480
cttcatttcc	tcacaaagca	atgttttcgc	agccagattc	ttctgctcgc	gcaccttttc	540
ttttcgaa						548

(2) INFORMATION FOR SEQ ID NO:83

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 668 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...668

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:83

ggctccgata	caggaagctc	tctctcccta	tggcaatacg	aagcaaatca	cgaggagatt	60
atccgcgatg	ctatccatgc	cggagcaggg	tacaaggcat	acttctgccc	tacttcaatc	120
cgatcggggc	acaccccacg	gcgcatacgg	agagcttcc	aacggagtgc	cacagaatct	180
gatcccttat	ttgactaaac	ggcagcaggg	atcagagccg	aactgagcgt	cttcggcgat	240
gactagacac	gcccagcggc	tcttgatatc	gggactatat	ctatgtggtg	gattggccaa	300
agcgcgatgtg	gctgccatcg	aacggatgct	gaatgaagag	aaacgagcga	ttcgtctgaa	360
gtctttaata	taggtacggg	taggggcgtg	aggtgctgga	gcttatccgt	accttcgaac	420
gggtgacagg	cgttgctgtt	ctcatcggat	agtaggaagg	cgcgaaggcg	atatcgaaca	480
ggtatgggcc	agccgaagaa	agccaatgag	gtgttggtt	ggaaagcttt	ggagtcgttg	540
aagacacact	gctgagtgc	tggcgttggc	agcaacgctt	gtcggagagt	aatccgcagc	600
ccattaacgc	acccgatacc	ctatcttctg	gcagatgaca	tcctatcgac	caaaatcact	660
tacctgac						668

(2) INFORMATION FOR SEQ ID NO:84

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 647 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...647

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:84

```

ggaaaaatata ttgcgcggacg cattattgcc acctgtccgg ggcacagcac aacaacaaga      60
tggcgcgcct gattcgcaaa gaaatcaaac agaacgaaca caggccctg tctacaatcc      120
gaacaaagag ccgatcatgg acatcaacgg atcaaagagc ttctaccca ccgctatccg      180
ttcctattgg tcgatagatc atcgaagtag ggccggacta tatagtcgga gtaaagagcg      240
tttccgcaac gaaccatttt tccccgggtc cttccctggg gagcctgtga tgccggagtc      300
ctgcaagtag aggcaatggc gcagggtggga gggctcttgg taccaatacc ctgaccgagc      360
cttcgagcta ctccacatac ttccttatga tcacaaagtg aaattccgcc gtaaagtggg      420
accggcgac actttgggtg taagctcaga atgatttccg agatacgagc aggagtcgct      480
aatatgcgcg cttagctttc gtaggagagc agttagcctg tgaagctgaa tttatggcaa      540
gataatccag aataaagaat gatgtcagag acaaaaatca gtccgttgca tgggtggatc      600
cgcatgccga agataggaag taggtgttga gataggcca ttgccgt      647

```

(2) INFORMATION FOR SEQ ID NO:85

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 631 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...631

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:85

```

aaagtccaag gaagagttgt ctgcttttct cggctgtgag catatcgagg ctgcaaatgc      60
ttcgtcaagc aggagcaatt gcgggcgttg gagaaatata gtgccagtgc cacacgctga      120
cgttgccctc cgcttagatc cttcggaacc gatgcaatat gtccgacaag ccgaggggtg      180
gtacaatgct ctcaaatecg gcatctctat gggctncett ncgcagggtg tatggaagta      240
cgatatctca tgactcgtt tccatggcaa aagcccatat tgctggggaa ctatcctatg      300
gaaaaagatt ttggattcag aggtttccca tcgaatagca cttgccctca tactctgtca      360
gtacacctgc caaaacgtgc aggagtgttg attgccacag cccgaaggtc ccgttatggc      420
aaaaatctct cttttgggaa tttcagtga agaccgtcca atgctttcac ttccgtactc      480
ccgtggcgat tgtaacggcc agattgcgaa tagagatcat ttgcctaata gaggaatctc      540
gtttcgtccg tctctttgat tatgccggac tttacggatc agatccttcc gggttagtcgc      600
tcgggaccaaa tttcttggca tgtaccagtc c      631

```

(2) INFORMATION FOR SEQ ID NO:86

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 498 base pairs

(B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...498

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:86

aagtgctgac	gggccaaagac	agttgttacg	ggcaccggaa	gccattcgtg	cactcgtgtt	60
cagggcacct	ggtatctaaa	gacggtacag	ttgcctgcgg	tactaagtat	gttgccttc	120
gtcacttcgg	ctgtacggac	ttcttctgat	caacctcgat	gatgttgaga	tcaaggccaa	180
cggcaagcgc	gcagactcac	ggaaacgttc	gagtcttcta	ctcatggaga	ggcaccagcg	240
gaatgactac	tatcgatgcc	gatggcgatg	gtcagggttg	gctctgtctg	tcttcggaca	300
attgggatgg	ctgacagctc	atggcggcac	caacgtagta	gccctttctc	atggaatgga	360
atggctttga	atcctgataa	ctatctcatc	tcaaggatgt	tacaggcgca	acgaaggtaa	420
agtactacta	tgcagtcaac	gnnggttttc	ccggggatca	ctatgcggtg	ntgatctcca	480
agacgggcac	aacgcccgg					498

(2) INFORMATION FOR SEQ ID NO:87

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 647 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...647

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:87

ggattttctc	aacttctgtc	ccatcatctc	tatagaaggc	agccggatga	gccttacgat	60
gtcaatacga	tgctcggaca	gtcaagcgc	gcacaaatga	aaaagtgggtg	caggatggct	120
ttgagaatgg	ggcactctat	aatgacggct	actcaaactt	accgaggtag	agctgcacga	180
cttcgacgaa	ctcaaagtat	cattggcaaa	accaaggcga	tggcaaagtc	cggtgacata	240
gatataatca	ccaagggtctc	acccatgagc	aatacgagga	gaaagagcga	ctgggaagag	300
gaaaaagaaa	ggcctaacac	ccgaagagaa	aaaacgactg	gacaactgaa	agccaaaggc	360
gaccaacgcc	gagaggctat	ttctatcctc	cgggcatatc	catccgcatg	cctctgatgc	420
tctatggggc	tgaatgaag	gtgaggataa	ggagctgacc	attgacaatt	ttgccaatct	480
cgtcgatgag	agtcttggca	ggaatttatg	cctcgcggcg	ttaccaagcg	gtctttcgtg	540

```

cttcaagcgt tactacgacc cgcacatatt cgtgaggcgg ggaagcgctc cgtgagatgg 600
ctcgtatggc ggataagttc accatcgaag gagcgtaagg gcgtatt 647

```

(2) INFORMATION FOR SEQ ID NO:88

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 622 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...622

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:88

```

gggatttacg attagacgaa aataggccag gacgtccttg atctcttttg cgaatagaac 60
gaaagcccac cgtatatacg aaaagggata ttgtgtttcg aagtgttcc tcgaaaactc 120
ggctctgcgc attagtgcgg tacagaaggc gaaatcgaa taaggacaat gctcttgcat 180
gcgtcgctcg acgatcaatc cgctaccgta taagcctcca aataccccga cagacaaccc 240
gtcagcgaat acgtcacct acttgtttgt tcgaaaaaac ttgcttgggg attccccctc 300
attgtgagca atcaagctat tggcagcatt gacgatgctc tgttactccg atagttctcc 360
tcaagtttga aaagtgttgc cccggggaac gatttgaaaa gccagagtg tttttccact 420
tgggctccac ggaaactgta ttactctgag catcatcccc cacgacgaat accttgccct 480
tctcccccat aactgcctgg caatcaaata ctgtgcaaag ttggtatcct gatattccgc 540
gatcaataaa taatcgatgc ggtcacgga ggtctgcaag acatccgga atcacgaaaa 600
aggacattgt ttgaaaagc ag 622

```

(2) INFORMATION FOR SEQ ID NO:89

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 581 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...581

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:89

tacaaactgg	acgtttagt	tattccgaca	aacaagccta	tcgcccgtag	gatatgaatg	60
atcgatatcta	taagacggca	cgtgaaaaat	atgcagcatt	atcgaagaga	ttgtacgtot	120
tgtcgaagag	ggcagacctg	tacttgtagt	actacttcgg	tggaatatc	cgaattgttg	180
agccgtatgt	tacgctgcgt	ggcatccaac	cacaaatgta	ctcaatgcca	aattgcatca	240
gaaggggccc	agattgtagc	tcaggccggg	cagaaaggaa	ctgttaccat	cgcacgaaca	300
tggccgggtcg	tggtaccnac	atcaagctct	ctgccgaggt	taaaaagccg	ggggtatggc	360
tatcattggg	acggaaaggc	acgaatccag	acagtggaca	gacagcttcg	tggtcgttcc	420
ggccgtcagg	gtgatcccg	tcgtccatat	tctatgtttc	ccttgaagat	catctgatgc	480
gcctctttgc	acagaaaaga	ttgcattatt	gatggatcgt	ttaggtttca	aggaaggaga	540
gtgctcga	actacatgct	nagtaagtcc	gtggagcgtg	c		581

(2) INFORMATION FOR SEQ ID NO:90

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 633 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...633

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:90

gtgctgatga	cgtagccgt	ttactcattt	atgcctctga	tccggacgaa	cagatctcat	60
tgtgacgcga	gtgttcgatc	gcctttcgga	aacactctcg	tcggggaaca	acgactgacc	120
atcaatacgg	ctacagaact	gaatccgtga	ttatggattg	gctctctgcc	ttggacacca	180
atgttgctat	cctgctacac	tgatgggatt	ggtcggaggc	ttcacgatga	tagcccggtc	240
tgattttttg	gtcatggaca	aaacgcagtt	tatcggcatg	ctcaaagctt	taggtgtgct	300
gaagggtcgc	ttcgccgcat	attcctctat	ctggctatga	tgccgttggt	cgtggtatga	360
tctggggcaa	tgttttggct	cttatactct	gctcctgcag	caacatttcc	gctggttgcg	420
tctccttcga	tctgatatt	tctacatgga	ctatgtgcct	gttcaagtgg	actggctcgt	480
atggattctc	ttaatttggg	taccctcctc	gttaccttct	tgatgctcct	tgtcccatcc	540
atattatttc	gagaatttcc	cccgtaaaag	cccttcgctt	cgagtaatgc	ttcaccaggg	600
aatagggtag	gtcatctgtc	cattcgagac	cat			633

(2) INFORMATION FOR SEQ ID NO:91

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 667 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...667

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:91

```

ggcaacgtcc tccgcagtgc cgaaaacacc tgcattgccc gatatacctc gaggcattgca      60
gcagcttcgt cgtccacggt accgcggacg atgcttttcg tagaaatttg tcgttctgtg      120
ccggtgcaat gcgcgaaacg gaattattatc gagtggaga taaccgagcg aaccggctcc      180
gatggggcgg aatatagttc ttcgacaaag acgttcaagc tcttgcccga tactttttcc      240
acaattgctg tagcaggata aaccccgat ccgaatactt gtagegtccg actcattgcg      300
aggggtagaa gcgatggtat tgaggacaat ttctttgacc tcttcgatag atacagattg      360
gaagaaaaac gaaacggata gtccggccga aatgcccgga aaccaaactg gagcgaaatc      420
cgaagaatgg attgccccac aattggtatc tactcgaacc catcccgaac tccgccgggg      480
agagagcaac tgccgtccaa actgctactg tctatcagag attcgtagaa attgatcgag      540
gccgaaggcc tgcttcatga agtagaagct gctgtacggt gatgtcttga ggtctgttcg      600
ggcaaacga ggcaatagcg ttccgagccg gtccgaggct tcaattttcc atcctgaacc      660
aatagca                                           667

```

(2) INFORMATION FOR SEQ ID NO:92

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 612 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...612

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:92

```

ttgcactcta tctgcgagggc gaagttcccg gattccaccc gctgcagtta accgtgtgac      60
cggccagccg cttgttatga gtgagatggt agaagtatca cgcaaatgat ggaggagaaa      120
tgattatgtc agaaacgact aagtgcccat gtacgaggca aaagactata agagcgatca      180
gtatgtgctg ttggtgtcggg ttgcggcgac cacgctgtgg tagtaaccct ccagaaggca      240
atggcgaaat agggatccct ccccatcaga cggcggtaat gtccgggtatt cggagttcct      300
cccgtttgcc atactatatg aacacctatg gcttccacac catcacggtc gtggtgcagc      360
catcgcgacc ggcgtgaaga cagccaatcc gggctttccg tatggctcgc atccggagat      420
ggtgacagct tggctatcgg cgcaaccact tcattcatgc cgtgcgcagg aatatcgata      480
tcaatgcagt ctcttcaata accgtatcta tggcttgacc aaaggccaat actctcctac      540
tcagctcgcg gattcgtatc caagagttct ccctacggta cggtagaaat ccggttatcc      600
ccgcagaact gg                                           612

```

(2) INFORMATION FOR SEQ ID NO:93

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1356 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...1356

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:93

gattcttaga	aaagttgatt	attaacgaca	aaaacaaaat	ataaagatga	catcgctactg	60
actattctca	tcctgctcat	atcgctcttc	cttattctgt	cgtagtggtg	cagaactcca	120
aagggggcgg	cttggcagcc	ggcttcgata	cagcaatcag	atcatgggcg	tccgcaagac	180
taccgatttc	ctcgagaggc	cacttggtgg	tgggccggtg	tcattgccgt	tctggccatc	240
gtttcactca	cttcctccac	acgggaaagg	tcgatgagag	ccaaaacgtt	ctgaggaaac	300
ccttgacaaa	gaaggtgaag	gaagaaaaga	actctgcagt	gataacttcg	gtggagatgc	360
cgctgctacg	gaatctgccc	ggcccgcgac	cgagaggcca	ctcccaggga	ggggcaggca	420
caataaggag	gaccggcccc	tcatatccct	tgcaggagat	acggggatcg	acagacgtct	480
ttgtctttga	cgaggcttga	gggcaaagac	gtttgtttgg	cagggtgccg	ctcgccgcag	540
ccccgggaca	aggctcaagg	ggcggaacgg	acagagcctc	cgagggggac	gacaagccct	600
tgcgaacgga	acggacggac	gtacccgaaa	aaacgtcaga	cgttccgaca	aaaacgtcta	660
gacgttttga	ctgaaacgtc	tagacgatcg	aagcaaacgt	ctagacgttt	ttcgcgaaag	720
gtctagacgt	tttgaagacc	cgaccttttg	gcagaagaca	agagagatga	caaagagact	780
attctgcccc	aatgggcacc	gcaagaggcc	gtacaattga	cctggcctca	cgacgaaccg	840
actgggctta	tatgctcgac	gaggtggaaa	cctgcttcgt	cccatagcca	ccgccatact	900
ccgccacgag	cgactgatag	tcgtttgccc	catcgcaagc	gggtgttcgg	cctgctgcct	960
cccgagctgc	accaccggct	tactgcttcg	agctgccctc	gaacgataca	tgggcgcgcg	1020
accacggagc	atttccctcc	tcgccgacgg	ccgtccgatg	atagccgact	tcgccttcac	1080
ggctggggca	tgaagtttgc	cgcccatcac	gacaacctca	tcacgagcgg	ctccacgccc	1140
tgggcctggt	cgccgaagga	gttaccctgg	acaatccctc	gccttcgtcc	tcgaaggagg	1200
agcactggag	acggatggcg	aagggtcttg	ctgaccacgg	acagctgcct	cttcgagccg	1260
aaccgcaatg	ccggctgagc	cgacgggcac	tatcgacacg	ctgaaagaga	gcctcggcgt	1320
caaccgcgta	ctctccttcg	cacggagcct	tggccg			1356

(2) INFORMATION FOR SEQ ID NO:94

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 620 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...620

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:94

tgctgctgac	cgaatttggc	aagtcgctgc	ccaaggggtga	ggccgagcga	ttcgcaagaa	60
attcgtcaag	caaaagcaag	gcactcctgc	atctgctcgt	ccgccaaaga	ggaaaccgcg	120
ggaatggcag	cgaaagaagc	tcaggtatag	ctacggaagt	gcctcaagac	atgcgacctc	180
gctttacgat	ccaaaggaaa	gtagagaccg	aaaagccggc	tgaaccggtt	ccttcgcccc	240
aggacaggag	cctgacaccg	tgcgtgagga	caaaccgcga	agagaaactg	caccgtaaaa	300
gaggaaacaa	aggtcgtccc	cgtcaaggaa	gataagcccc	aggagaaaaa	ccaaagcaag	360
aagagcctaa	acgggaggaa	cccaaaccgg	agagcctgta	caggcggctc	ccgttgccaa	420
gccggtcgaa	aaacctgtgg	aaaaccacag	caaccggtca	tgacacagaa	acctcaagaa	480
gctgaaacac	tcctccggct	caagagatgg	agaaaaaaga	agacaccgaa	gaagttttcg	540
tctgaagacc	aacacgcagg	agccacaagt	gaaagtggtc	ggaaagatga	cctctctcga	600
tcaattcatt	cacgcgttcc					620

(2) INFORMATION FOR SEQ ID NO:95

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1361 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1361

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:95

cgtaagatcg	tgaagcctat	atcaagcgtc	tgaatatctg	aagcactcgc	atgtcctatc	60
cgggcggttat	caagacctat	gctattcagg	ccggccgcaa	ctccgtgtga	tcgtcgggtg	120
cgacaagacg	gacgatgcct	cgggtggaacg	ctctcgaacg	aaatagccaa	agaatccag	180
gacgagatga	cctaccggga	caagtgaaga	tcacagtgat	ccgcgaatct	cgctccgtca	240
gctaccctaaa	taatcccgca	caccgggtgga	tagtacctgc	tcgcatgatg	tggcgttatg	300
atttatacct	cctoctatca	gcagcactag	aggactacgc	cggcaaagca	aaagacggat	360
ggactaccga	ttagacaata	cgacgacctc	ccgacgaagg	atgcctgcaa	ggggtgtcat	420
agccagccgc	tcagcactta	tactggctga	atgacatccc	cgatttgccc	gaagatggcg	480
gattcgtgga	gtacagttca	agaatacgcg	caaaggatac	tacctcaaca	gcgagaggaa	540
gagctgcaca	aaggggatgt	agtagccgta	gaggccaatc	cgggtcacac	atcgggacag	600
tgacgctgac	cggcaagttg	gtaaaactcc	agatgcgaag	catcgataca	atacgaacaa	660
cggcgagcct	ttcaaaatat	accgcaagcc	aaacagggcg	atctggataa	gtactgcgaa	720
gcaaaggcgc	gagagacgat	acgatgattc	agtcccgtca	gattttctgcc	gagctgaatc	780
tggaatgaag	atcggagatg	tggagtatca	gggcgatggc	aataaggcca	tttctactat	840
atcgccgatg	agcgcgtgga	ctttcgccaa	ctgatccgag	tatggcagag	accttccata	900
tccgcgtgga	gatgaagcag	atcgggtgcaa	gcaggaggcc	ggccgtatag	gcggtatcgg	960
tccttgtggc	cgccagctgt	ctgctcggcc	tggaaagatga	atttcgtatc	ggtgaatacg	1020
agtgcagccg	ctatcaagac	ttagctctca	atctcagaa	gctcacgggc	ctctgcgcaa	1080
gctcaaatgc	tgccctcaatt	atgaggtgga	tgcttatgtg	gaagctctaa	gaagatgccg	1140


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agtcgggaga tegtcttggg gacgaaagaa agtgcgacca ctatttcaag gcggatgtat 1200
tccgtcgga ggtttcgat tctacgttcc caatgctccg gtcaatctta cgactatata 1260
ggctcgctgt gcttcgaggt gatcagccag aacaagcagg ggttcaagcc ggtatcgctg 1320
gagatgacga caagaagcag tcgtccggac acgaattgtc c 1361

```

(2) INFORMATION FOR SEQ ID NO:96

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 675 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...675

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:96

```

gtgttttttg cgataaggtc tgaccttgaa aaaaaggatt ctcaaattgt caatatattt 60
tcctctatgt cttatcgatt ctgatataata acacaacttt tcttttgaag tgggtatcag 120
gcttatgttc taccctttta tgttcatttc atattgatcc ctaatgctta tgtattgtca 180
gataaaatat ggcaaaagggt gtgatttttg ctatttttgt tgtgttctca ttctttatgc 240
ttaagatctc agcagtcagg ctgaaccata cgctaactat aagtctatac tctttgaaaa 300
atactggta agagaataat gatcgtgcat tctcccttgg tcacgtgctt attcctccat 360
acaacgtgga gaaatcagaa atcgagtcctg atttgaaata gcctacttga atgtagctaa 420
aatgttttat gacaaagctc ctgcaatcaa tataagacga taagggaata caggccactg 480
aatccgaaga aatcgccctc atgcaatacc attcggttaat ccgatttagg ttgcttgtca 540
ttgtcagact cttctgttct gagatattta ggatatttct gtgtaaaaag aacagaagat 600
aaaaagaatg atgagagcct gacttttgtg gccacagctt tttcctacaa gtaattcgac 660
ataatatgat accgt 675

```

(2) INFORMATION FOR SEQ ID NO:97

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 627 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature

(B) LOCATION 1...627

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:97

ggcgaagcat	agcggtagcc	cagctcatag	tcgatcagtc	gctcaggcga	ggatactgtc	60
ctattccggc	ttcgggtgtaa	ttggttctgt	taggctcggg	tgtgctaccg	caacagaagc	120
ataggcagta	tgagcatcgt	cgaaacttag	gtaagaccgg	ccttcggatt	gaggaagcgg	180
aaggctctgt	ccaaatgatg	tgctgcatac	ttccctgtac	ctcatcatat	tcgtccgtga	240
tgccgttata	gtgtagccga	tggtacgata	ctggaggctg	gcatacatgt	tcagtcaggga	300
gtgatctgcc	agttggcttt	ggcaaaggct	gcaccttctc	tttgtctgcc	ctgttccgat	360
aatattcgaa	gtcgggagct	aagggtgat	tgactttttg	atgtaagtga	tacggccgaa	420
gtggtctcct	ttatagatat	tcccagggcc	ccgaactgca	aatcccatgc	accggtgtgc	480
cagttaagcg	accgatgagt	cctccgaagt	cattgtccag	atacttctga	cggatgagac	540
cgttttcttc	acggtcacac	tgttttccac	atagggtctg	agtgcataac	ctttagttac	600
gtccggtacg	atattcgctc	gtatagc				627

(2) INFORMATION FOR SEQ ID NO:98

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1236 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1236

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:98

cttggtctgc	actcgaagat	gatcatcagg	atattataga	ggctatcgan	cggctctgcc	60
gaagggtcta	tcaagagagc	tatgacaata	gtggcgtag	gtggacgaca	ccaagcggag	120
gcaacgggtg	ccctcctctg	tgtggattta	ccgaagcggg	attggaggag	gccattcggc	180
tgggatgcaa	tctcgtattg	cccaccatcc	gattcttttc	aaaccgctca	agcgattgac	240
cggcactcct	acgtggagcg	atgcgtggag	ctggccgtac	ggcacgggtct	ggtgtatatg	300
cggctcatac	caatgcggac	aacgctccgc	agggactgaa	tgcttctgtg	ccgaacgctt	360
cggcttgctg	aatacgcgac	cgctggagcc	gcgcaaggca	agctcttaga	actggtcacc	420
ttcgtcccca	cggagtatgc	catgccgtga	ggcaggcttt	gtggcaggcc	ggtgcaggcc	480
gtttggggca	tacgattgct	gttcgttcag	ccatgccggc	acagggactt	tcagagctgc	540
gaggggtgca	atccctttgt	gggagcgata	agcgaattgc	accatgagcg	gaggagcgga	600
tcagcctcgt	actgccggca	tacaggcagg	gtactgtctg	caggctttgc	acgcggctca	660
tccgtacgag	ctgccggctg	tcagccgatc	ccgctggcca	acgatcatcc	ctcggccgga	720
ggcggaatag	tggggatctg	ctctgcacca	taagcagcgc	ggagatgctg	ctgcacatca	780
aggagtattc	ggtctgaagg	tcctgtccca	ttcggcttgg	agggaaacggc	cgtgaggcgg	840
atggctatat	gcggcggtag	cgggtgctttc	atgtggcggc	gtcagcacag	gaggggtgcag	900
acctcttcct	gacaggggag	gcgaagtaca	agacttcttc	gatgcagggg	agcatctgct	960
gctggttacg	atcgggtcatt	cgagagcgaa	gaggtggcta	atgagctatt	tatgcgcata	1020
atatacgaga	attccctacc	tttgccaccc	acaaatcatc	ggttgcaacc	aatccggtaa	1080
ctattttgtag	ttagttaatt	gagcatcatg	gctaaagaaa	agatcatgtt	gagaacgaac	1140
agaagcgtag	aggaaaaatt	ggcagcactg	agcaagtgca	aaataccctc	tctgaaatag	1200
ataagatcaa	gactcttcgt	gcgaatgccg	tggaag			1236

(2) INFORMATION FOR SEQ ID NO:99

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 911 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...911

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:99

```

aggtttctccg tctcacacag atcgatgtgc acagtttggg tgagctgcgg tcaatcaagc      60
actgcgcaat atcgaagctt tctacgaagc tttcaataac agcctactga taagatgtat      120
ttggaacccg aaaagcgtgt agtcgttggg aagctgaccg acactcctat acgggaaaag      180
aggctacgtt ccgaggttat tccttggaac gcagcctctt tcgttagaaa aggaacctaa      240
tcggaaggaa agagcataag gaggggttat aaactcggcc tatcgctcat cagataatga      300
gaccaattcg agggacgctt ggtaacggct gccaccaata cacgatcttg gccgcaaagg      360
cttctgccaa tggctcggcc gcagcttgta cctagccccg gtagtcagca catcgccac      420
caaaagaaca cggataccgg cagcgcgcta ttcggggaga gggcaaactt ccctttcatg      480
gctgactttc ttccgaatag gactgtccgg tctgactgtc cgtatatacc tttctgcgca      540
accttcttga acaggtattc ccgttacgcg acttaactct tgtgcgatag gagtgcctga      600
ttgtagccac gcttacgttg tttgcgtggg tgtaaagaac cggcactatc agatcgtaat      660
ccttggacag gaaaggatag gatcggcggc cattcgctcg agcatttcgc cgatctcact      720
gtatcctcca tatttagtgc gtgtatcata ggccttacac ccccgctctc tttgaaaata      780
aaaagctgta cagcgcgtcg atataaacat cccatttcag acgatctaata ccaattgcat      840
cccttcgata taccngggca ttctcaccat gcaacgagga caaccccgat ctccgtctcg      900
gcgagcaagc t                                     911

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(2) INFORMATION FOR SEQ ID NO:100

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1582 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1582

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:100

```

ctcgatgaat tgggtgctccc gtagtaatca tgacgatcgc ttggcaaccc aaaaagcggtt      60
taatcttcaa ctgaacagggc gatgatccat accgacaagt gaccctgacg ggactatcta      120
ccggataccg aagcaagaaa cggagcgatc gtatcgaagc taatcgacct ttccatgctt      180
aatggcgaac tggtaagctg atgggtccga acggctgcgg caaatccacg ctcatgcaca      240
ccatccagga ttactgccac ctatttcggg gaatatcacc atcgaggagc gcgaacacac      300
ggtctccgca tgagagagaa agccaagatg ctcagtcttg tacgaccgac aaaatagcag      360
cgacgaatct gactgttcgg gatattgtcg tctcggacgc tatccctacg tcaattatcg      420
gggtagcctg accgcaaagg aaaggagatt gtgaatgaat cgctcatagc atgccgactg      480
atgggattcg atcgcgccaa tacggggaat taagcgatgg agaaaaacag cgtgtaatgt      540
agcccgcgct ttagcccaac agactcccgat gatgcttctt gacgaaccac ggcacacctc      600
gacctgccaa gccgtctgga ggtgatcatc atgctgccga attggcacgc aaaacgaaca      660
agagtatcct cgtttctacc cacgaatgga tctggccctg caatgggagg acacgggatg      720
gctgatgaac agccagggga gatttgtcgt ggggcaccgg aggatttggt actgaaccac      780
tgtttgaaaa agtattcggc aacgaaactc tttccttcaa tatagacagc ggaccttctc      840
cgtcaaacat aaaacggcta cacctgtttc tgtagaagga cagggtgctgc ctacaaatgg      900
acactgagtg ctttgcaccg gaatggctat gggaatctgc agatgcctcc gaccgcaaaa      960
tcaccgtggg agagggctgc ggattctgca ggagggcgat tcctcgaaaa gcttcgactc     1020
catcggtctt tgctacaaac gctgcacgct caccacgaat gaatgcttgt gaaacaaaaa     1080
ttatatgcaa aaccctacga tagatttcga caaagaaacg cctctgtttt tagtcctatg     1140
ggcgatcctc tttaccactt gaaagaaagt atgatcttcg cttcgcagga cgcagaggag     1200
tcgtgagcac ctgcaatctc aacggggcta ccgagaagac ctccgctacg ccttcaacaa     1260
cagttgcggg agggccccga cgtaatagcc aaacgctctg tagggatgcg aggaaagacc     1320
atgtcgaaca ctacgccgct tagcggaaga attgggtctg cctcttgaca aacaacgggc     1380
atgggtaccg ctgctctgat cgaaaatacg gcgacctcct ccgccaatac cacggagtaa     1440
cggtcatggc ggttgccacg gcaggtatag tgtaaatggg ggacgcgcag gagaacctgc     1500
cgcatacaac gaatttacca aacagacctg attaagccgg gtaccatcaa cgtattcctg     1560
ttcatcgagc ctcattggat gc                                     1582

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(2) INFORMATION FOR SEQ ID NO:101

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 901 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...901

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:101

```

aaacgtatcc tcatagcctg cccctccttc gtgtgcgact gtctggagac ctcgaagaag      60
tagccgatca cggacaaagc attttcaaaa aagcaggagt gcggatttca cttacatccc     120
ctgtctcaat agcggggcga attggatgat gctctccgaa acatttttaga ggaataatac     180
agcatgctca gttatctacc gatataccga cagacctgcc cctcctgagg caagccgctg     240
aagcctccgc cggaagaat ccggcgggtgc cgtaccgcac tccgatcggc cgaggtgata     300
tacgaggcgc gcaaccggct ttacgccatc cgtaccgcac aggagagcag gtggtgaaga     360
gcttccggat ccctattgcc attcagcgcg tgtctactca ttcttccgcc cctcgaaggc     420

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tgctcgctct	tatcgcaacg	catacggctg	ggcgatgcg	gcacggcac	tccgcgaccg	480
tcgggctatg	catcgaacgc	gaaaaagggc	ttctgtgcag	gagctactac	gtctgcgaag	540
catgcacgac	tgctgggata	ttcgtctctc	catgcaggga	gtggaagggg	cgaggccttg	600
ctccgtgcgc	tggccggatt	catcgcccga	atgcaccagc	aggcattcat	cacattgatt	660
tatcgccggg	caacgtactg	tatcggcaga	cgagaaaggc	gagtattcgt	tctacctcat	720
agacctgaac	cggataagtt	ctacgacaag	cggattgtgg	ggcggaaagc	ctatgccaac	780
tttgacgtct	gagcttttgt	cgggcagtga	gcaagcagct	tgccgaatat	tatcagaggc	840
acagggcttg	aatacggacg	gagtgggtcca	aggggtacaa	aggaatcgga	tcggttcttc	900
c						901

(2) INFORMATION FOR SEQ ID NO:102

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 664 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...664

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:102

aaaaaatctg	atcatacgcg	ttgcagacaa	tggcatagga	atagataaac	tgatcaggct	60
catatcttcg	acatcttcta	tcgaggacag	tccgtacga	aaagcatgga	tcaggcgctc	120
gactctcggt	taccaatata	ctggtcgaaa	ccttcgaggt	acgatcaaag	tggaaagcca	180
gccggggaaa	ggaagtcctt	caccatcagt	attcctacac	aaaaccagtc	ctcttcggca	240
gagatcttcc	ttggctaccc	tcctccgatg	acattgtcat	gcctgtccac	atcggcccga	300
tgactcaccg	acatctccga	tggtagcagc	tctgaatcat	cgtctgagga	cgaacgtccg	360
accatactgc	tcgtcgagga	caataaggat	ataacctgct	cgtcaaaacta	ctcctttgcg	420
atcgctacaa	tgtgctatcc	gcgcaaacgg	aaaagagggt	atagccctcg	ctaccgagca	480
tattcccagc	ttatcattac	ggatattatg	atgccgataa	tggatgggat	agaaatgaca	540
tccggatgaa	gcaatcgcc	ctgctctgct	acattcccat	tgtcgcttga	cggccaagag	600
taccgaacag	gacagattgg	aaggaatcaa	aagcggttag	tctcttatct	atgcagccat	660
tctc						664

(2) INFORMATION FOR SEQ ID NO:103

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 424 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...424

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:103

```

cattgcaata cggactatga acggctgcgc caagcccgat tcctcgccctt catcatcatg      60
tctatgtagt cctgaaagga gcattcagtg caacctgttg cccggcgcca tggtcgtatt      120
caacaatacg ggcaaccccc gcattggcaca ggaggaagcg gcgatgtcct catgggcac      180
attaccggcc tattgggtca ggctatcttc ctgcttcagc ctgtgtcctc ggcaattata      240
tccacgtttg gccggagaca tctatgccgg acgctatagt caggagagtc tgatgcacgc      300
gatattatcg acaatctggg tacagcggtc agacaagttc gcgttaggac ggaaatcggg      360
cnaaaaaaca cttgatatna gaangaactc tttttttgtt ccnaaacgcg atcncttggtg      420
agaa

```

(2) INFORMATION FOR SEQ ID NO:104

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 695 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...695

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:104

```

cggcgagaga aatactgttc ggagacgtcg atgcggagct ttacgggagt atctgttcta      60
ccacatagat aggtttcgtg ggagaagcca tatcgccgta tcataattgc gtgcggtaat      120
cacaccggat atagggtctt ggagcacgtg ttctccagca gattgttgta agtagtctcg      180
gccacgtcga gctgcgtttg agcgcacccc actgctgttt ggctatgcca cctattttgt      240
acagccatcc atacgctgga aattggtgcg cgtattctcc agttgtactt tggctggggtc      300
agttggctcc gatccaactc ggcgagcacc tgtccgcgtc ccacgatca cctacttcgg      360
ccgtaaggcg tacgattcta ttgccatctt gagggtaatg ttgttggtca ctcggcccg      420
aacggtagct gtgaaactca gacctcatc agcgtgtcgg tcttcaactat agtcgtctcc      480
accaattttg tgccatagct gccgaatcag cagcagacgg ccggtctctt ttcttgccat      540
gcagctcgtg agaatgagga acggcaggac tatgaggagg atagcactcc cagtgtattc      600
gatcttttca tatttatcat acaggtgtat tttggtatat ttacttttta cgctcattgt      660
tcgggaatcc ccattgccgg catcttgcca attcg

```

(2) INFORMATION FOR SEQ ID NO:105

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 694 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...694

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:105

gcctgcacgt	cgactctaga	ggatccccta	gtccgcttct	ttgcgattac	tgtttcaatc	60
ttgttatctc	cgcacagctc	cagaaagtaa	tgtgtactta	gcacccctct	cataaaaagca	120
atgactcaac	ggaagaacgc	ttcggatatt	tttaatgccg	gtgtaagaa	acaaaacaga	180
tctcaataat	cactgatgta	ctgtacgatg	acaaagggtg	gatataattct	tacaaccctt	240
ttccttgctt	cgcttnggtg	tacccatgcg	cagggtttct	tactgtaca	agctctgcga	300
gtgtggcgat	gggagaacaa	ttcagagtga	gttttaccct	caagatgcta	atggaacgga	360
attcaaagct	cctgccatga	gcgactttga	agcctttttg	gcccggccac	tgctacaagc	420
tcattcagtt	ccatttccaa	cgcaagacca	ctttgtctcg	aagtatcact	tatacatata	480
ccctgatgcc	aaatcggtcg	gcacctttca	gatcggtccg	gcctccatcc	gtgccaacgc	540
cgagattata	agaccaagca	ggtatccatc	aagggtgctt	cggccgataa	aatcatcga	600
aaaatactaa	gtcttctctt	tcttctcac	gagtcgagcc	gtagtttgtt	gtccgaacca	660
tcataataa	gaccaatgta	cgagcagaag	cgat			694

(2) INFORMATION FOR SEQ ID NO:106

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 870 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...870

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:106

gcgatgcgga	gagtcgatcg	caaagagcgg	gacgccgccc	cccttcgtct	cataaacgac	60
acgacaagag	tattttat	actgtctgcc	gaatcgaata	tttggtacc	tttgccgagg	120
tttgagacc	gccccgcaa	gtcgtggcgc	cccctcggtc	agccgcgtgc	gggaggagcc	180
gacgcacctc	acgggagaag	gocgagagcc	tcccccgga	aacgccggga	cgtggccgtg	240
gccgttgcaa	tatccctcg	aaaaaacgtc	tagacgtttt	gcccgaacg	tctaaccctt	300
tgctcgaaac	gtctagacgt	tttattcgga	acgtctagac	gtttcctccg	aacgtccaga	360
cgttttttt	cggaggactt	gagggatgta	tcggtatgag	tggtcatcaa	ataacaagaa	420
actaataata	agcaagtatt	gccctaaagt	atgtgatcaa	aaagtctgtc	gccaagatcg	480

gccccaaagc	ggacagacca	tctattatgc	ccagccggcg	gcacaagact	ctgtaacctc	540
cacagcctct	gcaagcgaat	agccgaggag	tcggctctga	cctccgccac	gtcaaaggca	600
tcctggaccg	cctcgtcaat	atcctcagcg	aggagctccc	aacggcaaga	cggttcgcat	660
cggcgagctg	ggcagcttcc	gcctctgttc	ggttccaaac	aattggacga	ccccaagaat	720
ttctctgtag	atcagtccag	aagcacaggc	tcgtcttcat	cccctcggca	gagctcaaga	780
gcatcccgca	cgcggaagc	tccgcccggg	gtcttcagcc	ctggccttcg	actcgacgtg	840
tggagccgaa	gcctaagaag	aaaccgggac				870

(2) INFORMATION FOR SEQ ID NO:107

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 571 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...571
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:107

cgctgtggct	ttcttgatga	agtcgccaaa	ggtgtccttt	gcagaacgat	acgactgaaa	60
gagcgatacg	agctgatgct	gcgcaatcga	atcggcacia	ggccgaggac	tttatctacg	120
aacagaccaa	tggcagttta	catcgcccag	cagcagattt	acgctcaaca	ccatactcgt	180
cttttatgag	ccggggagcca	tacatgttcc	gagctgattc	gccaactgca	tcaggatgat	240
tggctcgtaa	tttggtagaa	tccaaacaac	taagtatttt	attcatatat	tccgttatgg	300
ataaaaatgc	atgggtggcc	ggtttgccga	ttttcccgat	ttctggaagt	aggaatcaat	360
agcgatagca	gtatcacaga	tcgacaactg	tagatatcaa	agcctcacca	acgatctatc	420
tgcttgataa	tcacggatat	gaattctaaa	agatgtacaa	ataggagtta	taaaagagta	480
tctgaaagag	aaaaagaata	ctctctgctt	acgaagtatt	tatgcattac	agggaaaaat	540
accggagaat	cttctttgca	gctctgcaga	t			571

(2) INFORMATION FOR SEQ ID NO:108

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 714 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...714

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:108

ntccccggcc	cacatcgtcc	aaacgggag	cagcccttcg	ttttgctcac	gaaagcgacg	60
agactttctg	ccatatacggc	tgcacgttcg	ggaaaaagat	gttgtagaag	gggtgggag	120
ctcggtagg	gtcccagagc	gagaaggact	gtagtgtttg	cgtgccgtct	ttagcgtatg	180
gatctttttg	tccgctctct	gtaacggcca	tctgcacgc	tgaaaaccgt	cgggcagagc	240
agacttgata	gagcgcggta	tagaaaatag	tgtccactcg	gggcgatatt	ccttttccgg	300
cactttcnch	agacagggca	cgtttgccac	agcagcgatg	cttcgcacgg	tagcggtcga	360
aatcgtggtg	gggagcttct	ttcgccagat	tgtagccgct	cccttttcgt	ccacgcccga	420
tagggcggtg	gagatcgta	ggtgctgtcg	gacttggtta	ttaaaaacga	aaggtgggct	480
acaaggccgt	accaatgaat	tgcgtcgtat	cgttattggc	atattggggt	acactgtctt	540
cgtgaactgc	tctatcgga	gagaaaatct	gctgcggaag	aatatgcgtg	atcccgtgcc	600
caaccgtccg	agaagcgata	accgcttata	gtgtggcgtc	gatcagcttg	cagacggctt	660
gtctgtcgtc	ctgtcccaat	tcatacggcta	ttgagatcga	ggcgacttca	gtac	714

(2) INFORMATION FOR SEQ ID NO:109

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 681 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...681

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:109

caagcaaagc	taagtcccaa	tctcatcgtc	gggaggggtga	cgaacatcat	acgccaaaac	60
cctgacaagc	gaggatgaag	agatacatga	ctatcagctc	ggcaagaatc	cgccattgat	120
cgggtaggag	aggaagccat	acagataacg	tctataaagg	tgccgatgag	catgaatgcc	180
acggtttg	gtagcacttg	cccaaaagg	cgatggacat	actgccgccg	gccgtctcca	240
tccatctcga	gctgtcgatc	tcttgatctc	catggctatg	ctacacactg	tgacatgaag	300
atgagcagac	ccagtacgcc	gggtatcatg	atattgctca	ggtgatggag	tagttgagcc	360
acggattgcc	tatgggggtg	gtgtcgataa	cgtcggctgt	agccagtcca	tggcctggct	420
ttcggtggt	cctcgggcat	aagttgcgaa	cgagcggtg	caccggctac	cagttcgctg	480
atcatcttgt	gtccctgaag	aggagcgagc	caccaccat	ataggcatag	ttggtataga	540
ggagagcttg	ggcttgcttc	tgtgcgtagg	catcccggtg	cattccctgg	gtatatagta	600
gtaaccgtat	atctgcctc	gctgactgcc	agccgagctt	acgcacgctt	tcgaactggt	660
gaccatttgg	ggtgcttcca	t				681

(2) INFORMATION FOR SEQ ID NO:110

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 660 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double

- (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...660

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:110

cgggcaccct	gtccggcaat	acgatagaag	gcaatgtaga	gcagatgggt	tcagcctgcc	60
gcttacgcta	caacgattcg	aatccaaatt	gcccggcata	cagccttgcc	ttcgaccgaa	120
gaagagctta	aggcactggc	agcttttgaca	agggcaacta	caaatacaag	gtagaagact	180
actttgccaa	acccaagctt	ccgcttttca	gctaagcccc	aacggcaagt	acctctcata	240
catggaaaag	acgatgccgg	caaacgccat	gtctatgtca	aggaaattgc	caccgcaccg	300
tcaagcgtgc	catcgaagaa	aaggacgaac	tgatcaaagg	ctaggatgga	tcaacgacga	360
acgtctcttc	tttgtcatgg	acaaaggagg	gatgagaact	atcacctctt	tgcttcgaat	420
atcgacggca	gcaatacccc	catctcacc	cctttgacgg	agtgaaggct	tcgatcctca	480
acatgctcaa	gagcagaagg	actacatgat	catatccatg	aacaaaaaca	atccgcagac	540
ttcgaaccct	acaaactgaa	tgtagtaaca	ggcgagctga	cccagctcac	gagaataaag	600
atgcggccaa	ccccattcaa	ggntacgagt	tcgacaagac	cgcgaactgc	gtggattaca	660

(2) INFORMATION FOR SEQ ID NO:111

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 608 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...608

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:111

cggcttcaat	gctcttcgac	aagctgtcga	ggacttcgac	tcagaagaac	caagcacaga	60
ccctaccagt	ggaacaacta	ttcacagacc	gagatacaaa	ccgagatgag	agcaaagctc	120
gcaacgtcct	ccgtcggcag	catcatgcaa	tgatgtgcct	gtgcgcgact	tcgtagaggt	180
gtgcgtggat	atgaaaaaca	aggagtagga	ggatacgata	gctggtcggc	tcttcccgaa	240
ccttgacccg	cctaccgtcc	aatcgggaat	acagttgggg	ctttaccctt	cttcgggtacg	300
atcagtcggc	caaattggcca	ctgccaccgc	atacgtacta	ctagcacagg	gcgatagatg	360
tggcaaacac	catgaggtgc	caacgacact	caatatctta	tacggataaa	atacagcata	420
acgcatgaag	caactgaatg	aatagtagca	catttccaca	ccgaggggaag	cgtggcagag	480

```

atcgaccct aggtgccgtt cttatcaatg acacttaca ggtggcaaca gccgaagcca 540
tgcacctgac tacgttttgc aacgaatcaa tcacaccata ttcaaagagt ggaaatgcta 600
caggccaa 608

```

(2) INFORMATION FOR SEQ ID NO:112

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 655 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...655
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:112

```

tggccgttgc tcgacatgga aataagagag ctttgctgta tgctacatag gtgttctatt 60
tggtagcatg tacgggggata ggctttgatt ttttccgtag tttgtattga tattgtttct 120
tgcatacaca ttcaaaacta ttgacagatg gcaagcgaaa gaaaactgaa aaagcagata 180
accggagcca tttccgagtc tttactgatg cattcctgct caaactcttt gtgaaagagg 240
aaaaaacgca gaggtggaaa ctatcctcaa tcgtattctc caacttcaag atacaccatt 300
gccaagattc gttgcaacga cggtaaagcac aatcctgcac tcgaaagaaa tattatcgcc 360
ggctcgtgga tgatttcaag gaagagctgt ccagatcgtg aagagtattt cggcgtgtgc 420
gtctgataat tgatttgtca ctacgtgcat taagcagaaa tagcgtaaca tatagagggtg 480
ttttgaagtt ttctcacgat tgttgctcag gatgatgggc tggaaagccc tcgtcccatt 540
gcaaatccgc tccaaagcgt cattgcgtgg ctccctcatac cagcaattcg actttttgct 600
gggcaaaactc tactattggt ctatcggtcg gaaagccctt tctgatgaaa aaagg 655

```

(2) INFORMATION FOR SEQ ID NO:113

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 562 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...562

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:113

aagtgatccg	agggcttctc	atatacctttg	gcatactgtg	agaggaaagg	aaaagcgcac	60
ttccgtacca	atgtttgccg	atctcatagc	cggccttctg	aagagttcga	tcttgtctac	120
acttttgttc	cacttggttg	ctgttgtag	gtcagaccga	agtctgtacg	caaaccgttg	180
tcccaactcc	atattttttt	caggtaagtt	ggcatctatg	ttcaaataga	ggttacctgc	240
caccggtttt	ctccaccggc	agcccagttg	gtcagagaag	tctgagaggc	atttgtccgg	300
tcacaccttt	tatagtccag	tccttttttg	gagtgtcaga	tgcgtgtttg	cttcttgtgc	360
gttcgcaagg	gtgaacagca	agccacccat	tgcagaaaaa	caatcagtc	gtttcatctg	420
gtattttctt	ctttttttta	atgaaaacaa	gaaagccgca	caagaatcat	cgatgcttgc	480
acggcttgaa	aaaggtgggc	ccaataggat	tcgaacctat	gaccctctgc	ttgtaggcaa	540
tgctctaaac	cagctgagct	at				562

(2) INFORMATION FOR SEQ ID NO:114

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1157 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1157

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:114

ccccgcggcg	tcggccttga	caatggctct	gcaacaacag	tggcactcga	aaagctctac	60
ttcctgctcg	aagagctggc	tcgccccgac	attacagcga	ctatcgcgcc	cgcctgctgg	120
tcggagtctg	tctcaccctt	cgttccttcc	ccaccatacc	cgactctatt	ataatgagat	180
cgcattgcga	ctggaaccgt	caatgaacat	atcccttttg	aaccgaccct	tgagatgctt	240
tcgatcgttt	cctctttgcc	tgcgaaacag	agtccatcac	caagcatttg	caaacgagan	300
cttttaagcg	atatacagaa	gatagccccc	gacctgcgca	aatcggtatg	ggagataccg	360
agtccatata	ggagacaggc	aatccggagt	ggtggaggag	ctggagaaga	gcggtctggg	420
agacaaaatc	agggagttct	cgagttgcag	ctcgaaggag	ccgatgtaat	gcactcttcg	480
ttcatgaact	gaagggaagc	agctttttcc	gcgagatgca	caactggttt	ctgcctttca	540
tgcgcgccac	agccggatag	ctccactgct	cgaagagaat	gctgtgctaa	gcagcttgtg	600
gaggcgatag	gcccacagct	ttgcaactcg	gaccgctctc	tttcatogtt	tcgatggaaa	660
gectccctgc	tgcacttoga	ggttcgccat	gggagccgta	ggcgggtgaac	tggatgcact	720
caaagagcag	ataaacagga	tgtaccgggc	ggcgaaaccg	gcaaattgga	cacggccatc	780
aagactatct	gcaggatctg	tacagattct	ataaggtatg	cgaacggaag	aacaatttga	840
cgatattttc	ctctcgccca	tcccaccgga	tctgcctgtg	ctgatcgcta	tototacaag	900
cgtgatacgc	tgtgcatac	ggccgaattt	ccttcgcgcg	caagcattac	gatcgggcag	960
cgaagcttgc	tggccgattt	gctgaaggga	aagaaagtgc	cacggatacc	actctgcacc	1020
aaagctgggt	ttctccctcc	agcagcaggg	ccttttcgcc	caagcttttg	ctgcaattcg	1080
cgtgccgact	ggatcgatac	ggagaacgaa	tggtgtctca	agcgtatgct	cactgtaccg	1140
cagctgtgcc	cgtccgg					1157

(2) INFORMATION FOR SEQ ID NO:115

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 782 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...782

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:115

atgtacaagt	gaacaaaaaa	ctcgctcccg	atgagtataa	gatatggcgg	actccgtccg	60
ccgcagtatt	gccgaattgg	gaactcctat	tgcatacgcc	aaacgttcaa	tgtgtcgtat	120
acgttgccga	ctgccccaaat	atccgcgatga	attgggtgaa	tggttcattg	acttataatg	180
ccgtgtataa	ttgggacgtg	gagcgaaaac	gactaccgaa	caaatcattg	ggaacacgat	240
ccggatcagg	caacgctgga	acttccccctg	caactcaatc	tgacatcgct	gtatgcaaat	300
ctgctttcct	caagagaata	gagcagcaca	tcacgaatcc	ggaaaaaagg	atcctgtaaa	360
aaaagcagcc	cagccattga	ccaagaaaat	ccgttgctcc	ccgattccac	ggtaacactg	420
acgcacactt	ttgcgtccaa	gaagtgaag	tgtccgctct	cggtccggat	ggcaagatgt	480
atccgctgaa	acaaaaatca	aggacaagaa	tacaatcgtc	attttaaata	atgacagcaa	540
gagatcaatg	taacggtaac	tcccccgagg	cagaacggct	ccactcctca	ttcgggtgcga	600
taggcgaaag	gatggtatac	gccttgatga	tgctcaaagc	atcaacctta	actaccggca	660
atcgtccggc	ttgcatctgc	ccggatcttg	cccaacatca	aagctgcagg	cggacaaggc	720
tccgtggatg	gtgtttggca	ccgggatggg	actttgcttt	cggtcttacg	ggagaagatt	780
tc						782

(2) INFORMATION FOR SEQ ID NO:116

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 435 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...435

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:116

tcccccttg	tttgggaagt	tcagactcaa	tagcagatcg	acgacctgc	tccccttgtc	60
gtatttgaag	catcatttct	tataatagaa	agaagacagt	gaagatggtg	atgatgtcat	120
ttttcagtac	acatcgctt	ttctttactt	tgtagagcat	ggtttcgaat	ttgggaccgg	180

cttttgaaat	cagatnttct	aagaaacggt	tcaaagaact	atgttattcg	aatcgattac	240
ccctggcaat	ggtggctgat	agcaggtatc	ctgctctttg	tttttgagat	ttttccccgg	300
gtttcttctt	ggcttggttc	ggtatgggag	cttttgctgc	catataccgg	cggnctgggg	360
gttgtctatt	gtgtggcaga	ccgtnttttt	tacgtggctt	cgctgctctc	gctcttctg	420
ctcagaactt	ttatg					435

(2) INFORMATION FOR SEQ ID NO:117

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 601 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...601

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:117

ccggcacctt	tcaggagaat	accgaggata	aaggcgagga	taccgaacga	gcaaaaacca	60
gcatcgccaa	agtatagttc	ttcgggtcgc	cggtgcaca	cccttattcg	tggtgtcgag	120
gatggctccg	atcacgatgg	gaacaacatc	aagccgatat	tctgaataaa	gaaaatggcc	180
gaataagccg	agccaatact	ttggggtcga	taatcttggg	gtaccgacgg	ccagagagca	240
gcaggaccaa	agagaaagaa	atacccagta	cgacgatggc	tgcaatggct	atggaagaga	300
agaagtgggtg	ccgctctcaa	aggggaaaat	ggcgaatgtc	aggggcagat	aaacatcagt	360
actgctccga	caataagcat	ggtggctcct	ttccgacttt	atccaagaat	gcgccgagga	420
aaggcgctcag	caccatggct	ccaaggggaa	catactgaag	atacgggcag	ctccttcggc	480
cgtcagaccg	tatttggaact	gaagcatctt	cggtggcaaa	acttcttgaa	aggggaaaag	540
gcttgaatag	taaagcacgc	acaggagggc	aacattccag	acatgctatg	ccgaaccctg	600
t						601

(2) INFORMATION FOR SEQ ID NO:118

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 594 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature

(B) LOCATION 1...594

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:118

ccgttcaaca	cataagtccg	tttgteggat	gcgggggctt	gccaaagtga	gtcactgtct	60
gcccggatac	agaccattgg	agattctgta	cgggagcgat	tcattgccac	cttctccggg	120
cactacaacg	gacgcagcat	cgcggggcct	tgctcgttga	cagtgaaatg	ataagtctta	180
ccggcctcta	ccacatatcg	ttacctttgg	agacaccctc	tcctactata	tatattatgc	240
caggatgggg	ttaatgatta	catagtcata	agtgccggca	ggaatatcgg	ctgagctgtt	300
ccatcaagca	cgaaattcgt	gggagaaaaa	gatgcacgga	catgaccgga	actttatact	360
cgaaaggatc	gtaaagaccg	gccgggatcg	ttcgttggca	aacaaaaaag	attcttcggg	420
aatggatgcg	ccgtactgat	ttgatctgca	tcccagagca	tttgatagcc	tgtgccgtct	480
tcccatacat	gtgagcctcc	aagataattc	gtgccatacc	ggcaggaatc	ggatctcggg	540
atccttggcc	ttggatgttc	gaataccttt	ctgcaccgct	tgggtgcgca	caga	594

(2) INFORMATION FOR SEQ ID NO:119

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 830 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...830

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:119

ccctggctaa	tgtctatccg	atcaatagct	tcgaacggat	ggctaccgaa	gtctcggacg	60
ctttcgtttt	acgacgagca	gcactttccc	gatgcgtccg	tggtttcgca	tatcaattat	120
cactccgata	cgcttaccat	tcggaaggag	atccgatgga	gaacatccgc	atccgcctgc	180
gcgagaccga	tgactaaagc	tctccgaagt	cgctcgtcag	gtctccgctt	tcgggggtgg	240
aggcagcaga	acaagacggt	gctcaatcct	atggatgtct	acacgaatcc	aagtgtaacg	300
gagatctctc	gatggcgcgt	cgtcagacac	ccggcctgca	ggagtgggag	atcgtgaggg	360
ctttttcgtt	cgcggaggag	cctcttgagg	aaggccgtga	cgatagaagg	cattagagtg	420
aagcgttttt	tcggcaagaa	cgattcgacg	ctcctgctcg	ttcacgtttc	gagacaggaa	480
tgttcagcgg	ctttcgtctc	ccaccggagg	ctatggggcc	acggaaggcg	gtgcgctgac	540
ggactactcc	ggttgcgatt	ggcgggtaag	tctccctcgt	ccgtcgggta	ggaatatccc	600
cgctttttgt	aaacggtggg	ggtgggcata	tttccagtcg	aatcgtttct	atatagagca	660
aaatgcctca	gtgagcgatg	ccgccttata	cgtctgctgc	tcaagcccgg	agtacaaact	720
gcccgggtacc	aaccgtccta	tgcttacaat	gcacggacga	tatggaaccc	gacttcgcaa	780
gatgagtga	ggggcttttt	ctcttcgtac	acgacctttc	ctctttggct		830

(2) INFORMATION FOR SEQ ID NO:120

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 355 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...355

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:120

```

cggaacgata cgatcgaaac cccttttttg cgatagagac aaataagacc aggtatgaaa      60
cgattgatta tcgcaggcgt tttggcatgc gccttggtgcc ggtatatgga cagagagtac      120
tgagcgtgaa cgaatgccgg cgccttgcc cgaacacaac agagacttgg ccataagccg      180
cgaaaagata aatgcgccac cagtactcgc aaagccgctt tcaccagcta cctgcccagag      240
ctctcgccac cggtaacttac ctgcacaacc agaaggaagc tatcgctatt gagcacgagc      300
agaagcacia gctccagaat ctcggtaccg accttggtcac agcatagggc agaata      355

```

(2) INFORMATION FOR SEQ ID NO:121

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 642 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...642

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:121

```

cggctcgtgc aggacaatac atgcttgtct gtacggggcga tatggaatcc ttatggaaga      60
tgccatcatg atagagttgg cttccataga agtagcaggc atacgagcac ccattcatcg      120
ttactggtgg cctccaaccc acagatcatc ttctcacagt tcacgaggcc aatcccgaga      180
cattgccgac tttcagatta caaatgaagg tgggtgctact ttctccggga aaatcgaaat      240
agtgggtataa aggcctttctc ggaaactttc ttccaagcga aagaagaaca catggtctcg      300
cccaagggga aaccaaagta ttgtctccgg agctgactgc gaatcttctc tctatacaaa      360
tgccgaactc tttcccgatg gcacctatta catgtcatca gagagcaggg attttgggat      420
ccgatcgatt tgtttgggga cttactatc gtatccgtct cattacggat ctatcctctt      480
cggacatcgc ggtaaggatg tttctactat agtactttat cccaatcctg ctcacgactt      540
gtccatgtag ccattcctcc cacatatgcg ggcagcacac ttcggtttgtc gatattcaag      600
ggcgaatgca gctctccacg aagatcgaat ctgccgaatg cg                                642

```

(2) INFORMATION FOR SEQ ID NO:122

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 398 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...398

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:122

```

cgcttcggtc tcgcccggat atgctccctg ccactgagga ttgtcggaac aagcatcgtg      60
tgccgggcat cctcccatag ggcaagaatg ctgtcgtatc ggatggaaga gcccgcgga      120
tccgataatg atcagtcgag agacaattcc tgtctgcttg ctgtccaatg ctttctctgt      180
catgtgaaat caataaatgg ttgcaccgtc ttttgtgcct ttgggataca gtctgttgca      240
cgagtcttca gccgattcgt ccaaatagct gttcgggttca tcgagtacga ggagtcggga      300
cagcttacga tagctctggc caaaaggaca cgctgtagct gtcgccgctc aaatccgata      360
tggggcgttt gaggagatcg gggttatccg agtcggag      398

```

(2) INFORMATION FOR SEQ ID NO:123

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 644 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...644

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:123

```

atccccgaca aaagattttg aaaaaatttt ttccgaccgg ctgatcgaga ctttcttatg      60
cttccttgcc gatggaaaaa gtgtgtttcc cattctcgag cgataagtca gtcggagtcc      120
gtacagctgg catatagagc gtgcaatgga agccccaagc cggaagaatg agcctgtttc      180
atatcgtgat agaaacttcg aatatcaagg tctcgtccaa agcgttcttc acccccgtat      240
tcgcttgctg caatgcatag aggtaagatc gatatggatc tctccatctc tttcagaaat      300
gggccagagt ttgccgttct taagcagggt gcttagcaag acttggccaa agtcgggttc      360
attgatagaa ccattggttc acttctgctc caacaatgcg aatacgtcga ttggcgaaaa      420
tcgcttcata ctctccgcc aattatgcaa tagctcattc acatctatgc tttctcctc      480
aggaattga ggttttcgat tttgctatag aggaggaggg ttttattgag ctgtacaatt      540

```

```

ggttgatgga ctgtatagcc ttataaatct gttegagctg ctgtcattaa aggagggatc 600
ttgcagtagc atttccagtt tattgoggct tatggccgag gtgt 644

```

(2) INFORMATION FOR SEQ ID NO:124

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 307 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...307

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:124

```

ctttgaaggt cccctctaga ggatccccgg gctgttcgct ttcttttggt cgggcccatt 60
tgaggactga ataggaaata aatgttttat aagacaaaca ataagatgca gatgagaaca 120
tttcgtgtcg ttgcgatcgt ttgcgtgtct tttcttcttg gatgacgctt acggcgcaaa 180
agaatagttg gtgggtggtg cccatgccgg acgcgagtac ttcaacaaca caagtgagga 240
tatgagaaag gatggaatac cggagtagtc ctgcgctact atttctccga tcgatatatt 300
ctttggc 307

```

(2) INFORMATION FOR SEQ ID NO:125

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 654 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...654

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:125

```

cggcagaaat aggaaaaaag gaacggatgc atgtcagact ccggttgag agcttaagct 60
cggagtccgg acctacatgc tggcagaacg tctttttccg ataagctccc cactcaaatg 120
cgccacttgg gtgctatcga tattatgcag ccgctaacgg ccggttgag gatctgcgcc 180
tgaaaactcg tgtggaacgg atgccggagc ttgaccata cagggcagca tcggcctcga 240

```

ttctcctggc	gacttgccga	tgtagatgct	catgcgacta	ccgaaagact	ggaatcaagc	300
tcatggcaga	ccggcacgat	tggcctgaac	atgtggcggt	cgactgaaga	tgaaggcccg	360
actggctgcc	ggcaatctcc	tctcgggaag	tgggagggac	gcgtgtcgca	cctgactttc	420
cgaggctata	cctatgagga	ctgacgatcg	acttacaggc	cgacaagggg	cagtggtcag	480
gcatcctgaa	atgaacgacc	ccaatggcca	tatccggcta	tcctctgccg	gagaggggcg	540
cctttctctt	cgagttcttc	ccggttcgaa	tggaatctga	cagcgcacaa	cttcgtcccg	600
atcgactttt	gcccgtctcg	gactgccatc	ggccgatctc	ttctgatttc	ttcc	654

(2) INFORMATION FOR SEQ ID NO:126

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 646 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...646

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:126

cgtattcaga	gcgatatgct	gctttctact	gccccaaagt	ccaagaacac	tggttcggca	60
actcctatat	catgggtata	atcaagaaca	attatctgag	tttggtgccc	gtttcgagga	120
tctctataag	ccccctgccg	gacatgacct	gagatggggc	gtggcgttcc	tcacatgtat	180
gtgaagggaa	gctatcttgg	gcggagctga	ctatgggaga	cttctacgat	cagttcggta	240
gcggttggtg	ttccgcacct	atgaagagcg	caacctcggt	atagacaacg	cggtcgcggc	300
ggacgtatag	tactcactcc	ttttgatgga	gtgcgtgtca	aggtattgca	ggacagcagc	360
gtaactactt	cgaccgcacg	ggcaagggtat	tcattccggc	cgaggctacc	tactgggttc	420
tgatctggag	ctgaatgtag	acgttggagc	agtgccatgc	gcgacaatga	ctatcatttg	480
gctatcgggg	atcggttcgt	tccaaacacg	aagcagacga	agatatattt	gtgggtgtag	540
cgaagatcgc	aagcgactca	acctgccgct	caatgtcccg	attatgggct	gcgcaccaac	600
tttcaaaaag	gaggtctcgc	cctctacgca	gagtatgata	caaata		646

(2) INFORMATION FOR SEQ ID NO:127

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1231 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...1231

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:127

```

gcgactttcg gctcgtatTT ttccctgata gactgaatga ctctgcgcct gatgccgttt      60
ttcttctatt tgtatcgggt gttcttgcca taggcatgca ttgaacttta atcattattt      120
tcgcaccgga ctttgattac agtgtaatat gaaaagaata gtattgattc gccacggcga      180
aagcttggtg aacaagaaaa tcgctttacg ggatggacag atgtggattt gtccgaaaaa      240
ggtatgaaga agccaagaaa gccggcgagc tcatgaagaa agaaggcttt cagttaccaa      300
agcctatact tcttatctca aacgtgccgt caagaccctg aacgtgtcct cgaatgaatg      360
gacttggatt ggataccggg ggagaagacc tgcgtctgaa cgagaagcac tacggcatgc      420
tgcaaggcct caacaaggcc ggactgccga gaagtacgga gacgaacagg tactcatctg      480
gcgtcgcagc acgacgtccc cccacgcct atggagaaag aggatccgcg ctctccgtta      540
tggatccgcg ctacaaagggt gtgtgcgaga aagacctgcc actgacagag ctctntgcga      600
cacggtaaat cgtatcctcc cctattggaa cgagacctat tccccacgc tcaaggagca      660
tgacgaggtg ttggtagcag ctacgcgaac agtctgcgtg gtatcatcaa ggtgctgaaa      720
aacatttcgg acgaaacatc atcagcctga acctcccgac agcctgtcct tacgtttttg      780
aattgacgac aatctccgtc tgggtgaagg ctatttctct ggcgatccag aaggatcaaa      840
aagctgatgg aggcagtagc caatcagggc aagaagaaat aacccccatc gccggccctt      900
tctattcttg cttttcgaca gaaggcaagg aaaaaaaca gaagagagcg ttgcacgacc      960
gttagcgggt caacgctctc ttctatttca tctttttttg ctcggttgcc gcagatgtta     1020
tttgctccga ggtctttctc ctacaagacc ttgtcgtaca catgcatcag ggatcgggta     1080
cggcttcggg tgagaaacgc tctatatagg tacgccgctc ggctatctct tctcgcggag     1140
agagctgtcg gagaggatgc tgtccagcat ggatgcatca ttccgcgcat gtcgggggtcg     1200
gtgtacaggg acgaagggcc tccggttctt c                                     1231

```

(2) INFORMATION FOR SEQ ID NO:128

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 598 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...598

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:128

```

cgatttctgg agggctatca tccgatccag acgggatagc tttacctctc gggcacatcg      60
tccgcgaggt ggcgagcagc ataagtagcc gcccggttca atacttgaac atgaaggcag      120
agtcgtaacg cacctcttcc atcaggcgag agtggtctcg aagtcttctc cgtctccga      180
atggaagcca cagaagggtc gctgctgatg gcgcagtcgg gtatggcccg gcggatagct      240
gctacctgtc gagataccac cggcgcgatg agccgcgctt catgacgcgg agcacttgtc      300
gcttccgctc tgtgccggca ggtgtatatg attgcagata ttgggtatcg tgccatgacg      360
gcgatggcct cgteatccat atccttgggg tgggagaggt gaagcgtatg cgcattgtcg      420
gcacagcttc ggccactgct ggagcagatc ggggaagcgg atgatccgcc cgttttgttc      480
gtatcggtag agtttacatt ctgccccagc agcgttacct cgcggaaatt cttggcttta      540
gatccgcgac ttcggttgang atgctttcta tttcgcggct tctttctcgc ctctgtgtg      598

```

(2) INFORMATION FOR SEQ ID NO:129

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1412 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1412

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:129

```

tttcgtagcc atgcacttag tgcggacgaa tgagagagag atcttcttgt ccgtgtaata      60
gatacccggt ctatactgag agccgacatc gttccccttc tattgaggat tgtaggatct      120
atggtcttga agaaaagatc gagcagcgag agagcgatag ctcaactcgga tcatattcga      180
ctcttaccgt ctcggaatc ctgtggtttg ggaacagacc tcttcatacg aaggatcctc      240
gacatgccgt tggcataccc gacttcggta gccacgacac cacgcacttg tttgagaaat      300
gctcgggtacc ccagaagcac ccaccggcaa agtatattgt cttgtctcgg gaatactgtc      360
attatgcttt gccgaagaag agcaactacc ggactaagag aaaaactaaa agaagccata      420
ctgataagaa taagagaaaag aacttcataa caaatcggat tctcttttca tgagaatggg      480
gaagagacag ctcgaaagtag tggcaggtcc tattcatgat gatagggtc atggttgaga      540
tagtcatggc acgatacacc tggtcgggtga agaagaggcg gatcatctat gagagaaagt      600
cattcggctg agcgatattc tatcggttac agcctccgca ctgcagggtc aaatccatat      660
gggcctccta tgacaaagac cattcgcggg tgccgatcag cattttcttc tgcaaaaagg      720
ctgaaaactc catgcggaat actctctgcc tcgctcatcg agcaatacgg tgctgtccga      780
cggcgaagac gagcgagtat ctcccgaact tcggcatcct tttgctgttc ggagaaaagt      840
tgctacccag acggacatcg ggtattacct ccacttcgaa agaacataat ggctcaaccg      900
acgaatgtat tcctccgttg cctgaacctt tgtttgctgt cgggtcttgcc tacaacgagc      960
agtacgatct tcatacagaaa gcagatcac ccccgcatcg gcgttggaag cccaaccctg      1020
tgccggctgg acggcatgct cggttgttgc tttggaaaag tcggagcacc ggcggcagca      1080
tttctgtgg caactgctgc tgaccttgc ggccgatat atccgcgtcc atgcgccaag      1140
ccttcacatc ggtgtaccaa cggccgttga actcacgctt tcaatatoga ccagaccgt      1200
aacctgatcg cctacttgat aggaagatca atacgatctc cccacacgct gaagtgtatt      1260
ttgcgagggg attgtcgagc gtttcagta tgtactcttg ttttttccat tcctttccgg      1320
aagcttgccg actcccgaat tgagtggcag tatctgaata agctgccctt gatctgaata      1380
tccatatttg ttttgttcta acatagttat cg                                  1412

```

(2) INFORMATION FOR SEQ ID NO:130

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 612 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...612

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:130

```

ccccggtggag aaaatagaga gaaagctgcc atcagctgga cggacgaaag atgaagttag      60
tcaccgaagg agaagaacag atcttcaagc tcatcaggaa aagtaatccc accaccccccc      120
actatctctt ccgttcggaa tggaagcgat agggaaagag gatatgctcc atgcaccgag      180
tgccggcata tcctctttct ttttcagcta ttgctgctga tgaaacagcg tcccccgta      240
gtctacctgc gagagccatc gctgataacg acattgtaca ccttgggttc gcggcgaatt      300
ggttccttgg aatctctnct nggcattctc gacaaagaga tcgacagttc tttcttgacg      360
aggttgatcg tacaaccgcc aaatccgcca ccatgacgcg cgaaccggtc acgccacaat      420
cccgtgctat gccgttgagg agtcgagctc ttgcgagctc acctcataga gacgactcat      480
accatcgctg tttcgtatat tttctgtcct acggtttcgt agtcgtcgcg ctccagtgtc      540
cgcacacatc gagcactcgc tgcatttctt cgacgacata ctcggcacca tataatcctc      600
ggcagagact tc                                     612

```

(2) INFORMATION FOR SEQ ID NO:131

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 509 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...509

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:131

```

cggaaatttc tatttgctcg gtgcccatat accggagggt tgacctttcc gaagacacta      60
agaatcagct ctgcagcaaa agagctcaat caaactccat gcaacagtct cattttggaa      120
gattgccgaa cttatagagt cctaacagca tatccttctc gttcacttag atgaaaggag      180
accgcagtaa gaatattaga actggaaata tatgaagggc tgtatttccg agctgcgtac      240
ctgaagatga tgaagatcag gagaacgagc atcagagttt gcaagacgaa cggacacgct      300
caagcatgga ttgcgcctcg ttctgcttac ccttaccgac aaatgcaaca ggtaacctat      360
gaccatcagt acgacaacgc ccttgtagcc ggaatgaatt ggaagaaaac ttcgggatgg      420
aagtcgttga atattngtcc agaacctgtc cgccaccgct catcgaatcg gatcggaaga      480
agatccaacc aaacagacga gatggaaag                                     509

```

(2) INFORMATION FOR SEQ ID NO:132

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 664 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...664

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:132

```

cgagctgaaa caaaccaaag tgaccagcc ggcgatcttc ctccactcgt gattctggcc      60
aagacgatgg gcgaagactt ccgccccgat atggtggcgg ccattcgtct ggagagtttt      120
cggcattggg tgcagcaggt gccatgactt cgaagatggg ctctgtctcg tatcgaaacg      180
tgccatggcc atgcagaagc atgcgaagta cgcacctcga ctatggcggc tgtactgggt      240
ctgccgatga aaaggtggaa gaaatctgtg cccaagtga c gatgaagtt gtcgaccggc      300
caactacaac tgccccgggac agatcgttat atccgggttc gtaaaggagt ggacagagct      360
tgcgaactgc tcaaggaagc cggagccaag cggctcttaa gctcgtctgc ggtggagcat      420
tccattcccc tctgatggaa cggctcgtga agagctggca aaagccatcg aggagactac      480
gatcagtcag cgatctgccc catctatcag aacgtaacgg cttctgccgt caccgatccg      540
cagagattaa aaagaacctg atagcacagc tgacggcacc ggttcgctga cacagagtgt      600
gctgaatatg acaagcccga tggtgccgac cactttagga gttaggcccc cggaaatgta      660
ttgc

```

(2) INFORMATION FOR SEQ ID NO:133

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 733 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...733

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:133

```

agtcgatcag accctcgcga tcgaaagcgc gcaattcttc cgcggcagcg tacgtcccaa      60
gcccnhtaag tctgcaataa tcggcccacc ttgagcagct atggccatcg agatggcgca      120
aggccaaggc cagccgctct tcgcgagcaa attgggcccga cggggacggg cgtaccgtag      180
ttcgcaaccag atgaaccgag tacgagcctc gagaatcaat gccttgctcg ggcggaatatt      240
gacactccta tcgtcacgct ggcggcatta cggcgtgtgc cgccttcggc ctcccggggtt      300

```

ctacgccttt	gtgcaagggtg	agcgaagcgg	agaaagagcc	gattcctcta	tcttcaccgt	360
atatcccgaa	gccacgccgt	gggctatcgt	ccagccaagg	ccgtaacca	ccctttgact	420
tcacccgggg	agaatgtcga	tgggaggaaa	tcagatcggc	tatctcgtcc	agccccatcg	480
tgccctcggt	atcattttcg	gatacatcgt	ccgcttgccc	gtgccttgca	tatcgggcat	540
tctctcatca	caaacttggc	catttcttct	gtacagctat	atcggtttct	catcgccggt	600
cgattgtttt	cttcggggcc	gggaaaattt	ttcccgaac	cgacaaaaat	aaattttccg	660
gccggaaaat	ctctgtccga	anccttgat	atataaatna	aatctttgga	tatatgttcc	720
aaaactttgt	tta					733

(2) INFORMATION FOR SEQ ID NO:134

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 738 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...738

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:134

ggccatatag	accagaccac	tgaggctgcg	aatcaaaaact	gctttcatac	gtaagctcga	60
tagtctcttt	atattttatt	cgggatgttc	ttccgtctct	cttctccctc	aacgggaatg	120
ggtgcttcgg	catccgctgt	tgtctctctg	tggcggtagc	cggtgcattc	agcccaagca	180
attcttctgt	acgcgagccc	caggggcgtt	tgccgaatat	acgctctacg	tcatacgcca	240
gaatccttcg	cgcttgagca	acagatctgc	cagttcgtgg	tgcccggtt	catgtcgcgc	300
agaatgcttt	tggcgcgctc	gtattgttcg	gatattattc	tgttacttcg	gcatacgataa	360
cctcggcggt	agtatcactg	tacggctttg	tcgattccag	ccgtcgtttt	gcatttcgta	420
gtagttgatg	ttgggcagct	ttcgctcatg	ccataatagg	taaccatggc	gtaagccaac	480
ttcgtaacgc	ctccaagtca	ttggctgcac	cggtcgatac	acgtccgagg	aagagatctc	540
ggcggcacgt	ccacccaaaa	gggcgcaaag	ctgacacctg	agagcctcgt	tgctcgtgatc	600
tgacgtctct	ccggcgagata	ccaggcgcca	ccgagtgcct	gcctcgcggt	acgatagtga	660
ctttgacgag	aggattggca	tagcgtgcat	ccaactgata	gtagcgtgtc	cggcttcgtg	720
gatggcgatg	ctgcgcgc					738

(2) INFORMATION FOR SEQ ID NO:135

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 733 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...733

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:135

```

cggcattatt ttttttctga actatcattt tcttactatg ctgtatgctt atcgtatggc      60
tgcattttgc tgaggccata cgctaaaaac atttcaaagt atgtatttgt ttggataagc      120
ttttccctat catatattat cgctgctgtc taacctctat cattgagtat cgtatcatcc      180
gccagcaatt cggttaaagt tcccgcgggt attctgggtg tagaaacttc ttgtcaggcg      240
gatagtgggg taagcctgaa cgtacaagaa aattatcatt tgtgggacca aaaacgtggc      300
gcggaatttt tttgcttttg gttcgggaaa aaataatttc tcgacaaaaa cgaaaaaaaa      360
ctcgcgcgta aattttcaaa aatacgaacc atatctcgac actttgggtt cgtaaaatct      420
ttttggccaa aatctttcgg aaaaacaagg taagcctcat catctttctt gttgtggaaa      480
tccgtgtcgg atggagtttt acaccggttt tccgtgtcgg ctcttccatc aataccgatg      540
aagcaattcg cagggtctgc aagtttgaac cggatacttt atttttgtct cattacgaaa      600
ctattttcgg acagcgatat gagccaaaag cctacaacga tcggaaaatc atcctcatta      660
ccggcgggca cgttcgggca aaagtccat gctgagcaga tggcactagc gcttgccgtc      720
atcctatcta cct

```

(2) INFORMATION FOR SEQ ID NO:136

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2287 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...2287

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:136

```

ttcataggta taaacgaaga cagcacgacc tcctttcgtg cccatcgtag gtacacgata      60
tgttgcgctc catgcttccg cctcataagt cctttatgta caatactcca aggattttac      120
cgattggctc ccttattact ggcaaggtag tctcagacta cgcgatatac gtacaggata      180
gatctaagcc ctggaacgat gtctgacgga tggctnattc gncccgacgc catgaagaag      240
atacgaaggc tgaaagagac ggactccgct gtacgtcggc cacggtggac gaccgctgcg      300
cctctgccgt atatccatgt tccgacagga agcatangga ttgacagcgg agacattgca      360
gcggtctggc gaagtgcgca tcgaaaggca tgaggtgaaa tagtcggttg cgaagatagc      420
gaaggcgctc tactggctgc ctcttccctc cccacgatca taacacggcc tacacgattg      480
cttccggcca attcgtgaag gacaggggcg caatgccgga gcttttgtcc tgtatgaggc      540
aggggataga gggattcttc cgctcgttcg gaggtatcaa acaccttatt tccgactgtc      600
caaaggctcg attggcttat atggccacta agacgtaaat ggcgagcctt tcatgatacc      660
ggtcagcaaa aacagtatga atactgaagt aatccactac atcatteget ttctgatcgg      720
agataaagcg gaaacgatca gctcctcagt cgcacggtt atacctcgaa gcaagcgaga      780
tgtcccagata cagcattgtc atccgtgctt caaacttctt cgttcggata tttacgtacc      840

```

gataaggctt	ttcccttgtt	accgctgaaa	gatgggaggg	cgtacctctc	ctttttggag	960
agccgaccga	agagctgttg	aagagagcga	cacactgggtg	ctgaatgccg	acattgtcgc	1020
ctctacatat	tctgatctcc	cgctacgaag	aggatgtacc	ggcgtaaact	tcgagataac	1080
acggacgatt	tccgggaaga	gagtccttgc	ctttcaaagc	aggattttac	agcgtcctgt	1140
agtagatgaa	tacggggcca	ttctgcgcac	caaaatcgtc	agatgggctg	gccggtaaaa	1200
gacccagtc	cccatttctc	catgggaatc	tgacgcatga	cgtagacgaa	ccgttcgagt	1260
acagaggatg	gagagttttg	cccagacatt	gatcaaagga	acgcaaactc	cccttcaagg	1320
cttccgtctg	gcttatgcca	atccggcaag	tgatcgtttc	ttcacttttc	ccgttttgtg	1380
gattgggata	aaatattgcg	cagcaaaatg	ccggattgct	gccgattatc	ttcttcttca	1440
aagcaccocgg	aaaggcccca	caggatgcac	gaactattcg	ctgagaaaac	cgtctatca	1500
atcgctccga	tctttgttta	aaacaatgga	atagtgatag	ggcttcacag	caactactct	1560
gccggtctaa	cccagaactg	atcggaagc	agcgcaagcg	acttatgagc	gataccgtat	1620
ggcagtcgac	tgcaacaggc	atcactacct	tgacgctcgt	gagccgagga	catgcaagcc	1680
ctgatctcgg	caggatatcag	acacgattat	accatgggta	tgccgatgtt	gcaggtttcc	1740
gccttggtac	atcccgtccc	gttccttcat	tatgccttcc	acaagacggc	tgaccgagct	1800
gatcctgcac	ccattacact	gatggattgt	acgctgcaca	ggcaagagta	tatgggcctg	1860
gacgaagcta	cggccataga	agttggtgca	aggaaactgc	tgatgcatac	ttcatccacg	1920
gaggagaagc	cacactcctt	tggcacaacg	aatatctctc	cgcnacattc	atccctggca	1980
tgcccgtttg	tatcgagaag	tactgaggcg	atagaaacca	tggaggaaaa	acaagaggag	2040
gaatctttcg	actacgaacg	gccatcgacc	aatgaaacgg	gtactcatct	tcgccgatat	2100
cttccctcgg	cttttgctcc	gagagctgcc	tatctgacca	aatatctgcc	tcgattgggt	2160
gggaaccttt	tgtaataacg	gaaaaaatgc	cgactccggc	atcccgtcgc	acggcgatgt	2220
gtttggtgga	ttttgcagtg	atattccggg	aacgctatcg	atctctcttc	ggcttcggtt	2280
ctgtctc						2287

(2) INFORMATION FOR SEQ ID NO:137

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 707 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...707

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:137

ctgcgcaaaa	agctttacgg	ccaataagcg	tcttttcggc	cgcgacgagc	gtataagcaa	60
acgagaggag	agataaacc	gagaagcata	atggctgcac	agcctgcttt	gcttcggggt	120
tgtcacccct	ctcgttttat	ctatcgcgtt	tcttcggatc	agtttgcggt	ccggcttacc	180
aactccctgt	acatccctta	tacatcgcca	gatccacacg	aagagcctcg	gcctcacgca	240
cgacaagccg	gtcagcgtct	ccacttcctg	ggatccgccc	tgcaagaaat	cgtttgcgct	300
ataaaaaaag	tactttcggg	aggcatcttc	cgtgttttgt	ccatagctgt	tggactacat	360
catcggggac	ttgccggtat	ttggcgcgga	aagctcggcc	acctcttcca	ataaagacag	420
cagctcgggt	tcgtgttcgg	taaaatcgag	ccgatgggtt	tgtcgaagta	ggccgtagcg	480
gtagccgtta	ggagatcatc	atgaatttct	tcataatgta	ccaatcgata	tcggtcggat	540
atatgcacga	ataccgcgag	cagtaagcag	ttcggcaagg	cgcacctctc	atccgtctgc	600
tcgggaagtc	ccgaaccgaa	atagaaaagt	tcgcgatagc	cttcagcgtg	attaagccgg	660
gggcactctg	cgagcagaaa	tatagaacat	cctttccata	cgaccga		707

(2) INFORMATION FOR SEQ ID NO:138

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 440 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...440

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:138

cgggacgaac	cacogagtgg	agtgccacag	tgcttaacgcc	gggtatztat	cccgttcgaa	60
gacggaacgc	aatcgtctgg	gaattaggga	gaactctcgg	atttgggcag	ccgagaggtg	120
ctgaaagaag	ctggcgaaat	cttttgatc	cgccgaagt	ggacgtttct	attcgtccgg	180
gttggtttta	ccatgcgctg	aggacaagaa	agtcgaagtca	tttggaacaag	ttggtggata	240
tttactccag	tccgtagggt	ataattcagt	actcctgctc	aatgtaccgt	ccgaaggcga	300
ggcctgatcc	acgaagccga	tgccttgccg	ctgaaggagt	gggtgactat	ctcggtcggg	360
cctttgctca	tgacagggtg	gtggattttg	gccgctatgc	cgttggtcaa	ggacatgccg	420
tccaagaata	tgcactcgaa					440

(2) INFORMATION FOR SEQ ID NO:139

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 787 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...787

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:139

attgatatac	aacaaagccc	ttttgctcga	attggagcgt	cggctccgaa	tgcccgcacc	60
attgccgaag	ggtacgaagc	gcgcctcaaa	gccggtgaac	caaccagttg	gaatacaaca	120
agatcaagct	gaacctcgcc	tccgtcgagg	tgaaatatcc	cgcgtgcagg	tggatcgaaa	180
ggctctgctc	gtccggtcga	gcggttgaac	ggaggcaaag	agatcgcat	cgacgaaagc	240
cgctaaccgga	gatcgtgcta	cgcagtcctt	tctctgtatg	gttcgatcag	gtagggaaaa	300

gaatccgcag	ttggcatatg	cccgagaaga	ggtggccgca	agcagcagca	ggtagcattg	360
agccgagcag	caggattgcc	ggttttctct	gcggctatgt	aagcgagaaa	gtcgggagcg	420
aaaggtttca	gggagtatct	tcggaatata	cgtgcctctg	tgggaaaaca	aaaaccgcgt	480
caaacaagcg	aagcttcggg	cagagccgca	gaaatgcgtg	agacggacag	tcggcagcac	540
tatacagcga	gcttcagctc	ctgtacgaac	gtgccgcggg	gctaaagaca	cggcggaaaa	600
ttatcgcaga	ctgctgacga	cctccgacaa	tgccgactgc	tcaagaaagc	attggatgca	660
ggagagatct	ccttgctgga	ctatatgtcg	aaatgggact	ctactacgat	accgtcagtc	720
gggcgatgga	agccgacgcg	actatcaaca	ggcatttgcc	gaactctcag	cagtcgattt	780
gtaatgt						787

(2) INFORMATION FOR SEQ ID NO:140

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 687 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...687

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:140

ccggatcgta	ttttacgaac	cgtaattctc	gaaatttttg	tttgtgtttt	gaaaaaactg	60
gaaccggaat	tttttcgttt	tggtttggga	attttttatt	cccgaaccaa	aatgaaaatt	120
ttctogaacc	acgtttttcg	gagcgtaaat	aggaaaaatt	tggagtgcag	tgtactgaaa	180
agagttgaca	ctcggaagtg	ttaatttcga	gattaaaatt	acagagattt	ctctaaagtc	240
cattagggtt	tacacacctt	actctttaag	acgactttcg	gttgacagcc	gctnatnccg	300
ccttttggcg	gggagtcatt	ttgcgataga	gcttggggcg	gatcgggggg	ggattctott	360
gggggatcta	caaaggggca	ttactcgttc	tttctgtagc	aatatgccga	aatctacat	420
gatatatgga	aatagagggg	atccatgctt	ttaaacaggg	agtcatcatc	cggtcactac	480
tacacttttg	gaactggtct	gcagttatag	cagtaattgt	gtcggaaaat	gaccgaatgt	540
gactgtcaaa	acatagagat	aagcgggtcaa	agaacaaggg	ggataaaaag	aaatcgctgt	600
aaaaccttga	ttttacagcg	atcatcttaa	atatgaagtc	taattgacat	ctatgtgaca	660
tcgctttgag	acctattagc	ggtatga				687

(2) INFORMATION FOR SEQ ID NO:141

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 880 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...880

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:141

```

ttacacacta agatcttggg agttataggt tgttccggtc aggcaattga tagggggcaa      60
tcttgettct gcccggatcg gaccaacatt gaaattcgat tgcttttnng accgaatggt      120
gcagtcgcga ccggaagatg ggctatacac aaggcagatg gcggtattcc gtagaggata      180
acgggctatc ccatacgctc ttcgagctan cgctgtagag ctcggcgagg tacgctctac      240
agcgtgcgag ccgagccgta gagttccgct ccgtgagccg tagatgtggc cgagttagcc      300
gtagggcccg gcgcggtgag ccctacagcg tagcttgaag agcgtagagc gcagctcggt      360
acgctctacg gcgtagcccg agtcgctgta ggctagctc gacccccctt cggcgtatgt      420
tccgaatggc tataaaacaa tcggattoga tctgaagaaa atatgcaata tgctgtttgt      480
cagcgtatct atttctcggt tgagaaatct cagcttcgag aggccttcgac atccgatgaa      540
cgtcaaactt tttcccttct attttctgat tcgattatag tcaatatcca acaagagaga      600
gtcggcacca tatcgcttac atcgaaactc cgtttgatag ccacttttct aagaaagatt      660
aggatctatt ctggcaaaag ctcttagctt tccgcgaaat agttttaact attcatcgaa      720
atggttctaa gtacttgtag aaagcttaca aagcttttca cagagtattt aatacttttg      780
tgtcatacct caagaagatg gaggaataaa ccaatgcagt tccggctttt ccggaagact      840
taaggtattc acttgcacac cacttcttat tcttaatgcy      880

```

(2) INFORMATION FOR SEQ ID NO:142

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 627 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...627

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:142

```

tggattccgg cagatttctc cgtccaactt tagaagaatg agttggatat ttggggtaag      60
agggttagat ggattgttgg aaacataaatt tgtaggggaat taattgctcc ttgtataacc      120
aatcaatgg gatcattcgc atttccattt tgccaatgaa gtctgcagta gttacatttt      180
taacaggata ctgcttcgct gcttaaccgg tcagacatca atatgatatg cttatccaca      240
gcagtgaagt ggccataatg tttctcgcca ttttaagccc cccctgggta tgtgtcccca      300
aataggagtc aaagcccgga ttttttgaca gagaaaagca gtgcttttgt aaaatcagat      360
aagcgatgag gctcatggtc ataactcaca aggcgatncc cacccttctc gtagccgtcc      420
ccttaggcaa catttttttc aaaaacgctg tcccgatgca atggcagact ttaatctggc      480
aatgttttgc ctcccattga cgaagactgg tcgataacca tcaccacatc gacaggtacg      540
ttaccgcttt agtagtgatt tttagegtca catcccaagc attgggattt caggatccat      600
tggattggca accggtaccg catactt      627

```

(2) INFORMATION FOR SEQ ID NO:143

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 679 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...679

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:143

```

ctgttgaacg aattgcgatg taccatgacg ggcaggggtca gcttccatcg ctccacgcat      60
gcacgaagag catcgggcat atacatcata tccatatagt accctcttta atcggacaag      120
tgaagcgtcc ttctttgaca gctgcatata aatatccacg gcatagtccg tcgttccacc      180
accgggggagg gtgacgtgga gatcaaaccg gggaaacgaa ccgaacgtgt atctacaccg      240
aaacgttgtg gtagtagtca ctcaaaagct cgccactgac cttcgttact ccgtcatggt      300
cttgggacgc tgaatagtat cctgggggggt cttatcctta ggatatacatt gccgaaagca      360
ccgatagagc tgggcgtaaa cactgcacaa ttttttcacg agctacttcc agtgtattga      420
aaagtccctcc cagaccaata tccatgctaa ctgaggtttg gcttctgcta cggcactgag      480
aagggcagcc aattgtaa atcgatctact ttatacttat ccaccacttc tgctatttgt      540
tggcattggt gatgtctact atttcggcag gaccgcgttt cgagtagtcg cccttaggct      600
ctgcaccggg gatataaccc gcttcaacgt ttccctggga taacgcttcc tcaactccat      660
agtcaactcc gatccgatc                                     679

```

(2) INFORMATION FOR SEQ ID NO:144

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 611 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...611

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:144

```

ctgctcta at aaagaagggtg atataatagc tcttggttact tcatatacag atttatgagt      60
ggaacccttg cgatcagaaa agcagatgaa ggcaaatgca acttggttggc ggagatatac      120

```

```

agaatgcgat cgttcaaaat atatgcagat ggacgacaac aagattgctt gtgaagtctt 180
cgggactcct aacggataga tggtcggaca agggtttgtg tttctgacgc atctgtcttt 240
gatttgagtg gtatgaagat gaaatatacg gaggcctgat atttgacact ttctctatag 300
cccttgggac aaacttcttt atgcgaaatt tgggtgggatt atgtcaggag taaagagtct 360
tttataacct ctttcatttc tccgacagtt gtcaaggagt ggatgtctat actttggccc 420
gggaagataa ggatcgaaag taaactccgg tgtctgaggt gttgcttttc gacctggctg 480
gcaggatggt cttcggcaaa ccattgataa taaaatctat tcggacatag atactaacga 540
ctaaagcgaa agcggtatatt acgtagtctc ggtgcgggtct cttccggaag gtatcagttc 600
taaggtgcag g 611

```

(2) INFORMATION FOR SEQ ID NO:145

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 648 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...648

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:145

```

cgatggtttg ttattcatag aagagttgcc taagatctta caatatccgt agtgggtgttc 60
tttttcctca tggtaatcaa tagtataaat ctaattgagg aatcgatgga ttggctacaa 120
gtctgggtgct tctgggggatg ttatttttat accattcttt atctatgtca atatgtattt 180
atatgtaata atctgtttgtc tgttattgggt tgcttgggag cttttcttcg gatgaatctt 240
tatggacaac tgagaagcga acaaagattt tcatgggaga tacgggatct ttaatttagg 300
ccttcctttt agcttttatg ccttacgctt gcttaccgcc attcaaatac tgctttacct 360
cttccatatg tagtagctcc gctacttatt cctggttcga ttatttccat gtttttgtat 420
tgagaatttt atcaaagaaa atccttttaa acctgataag agtcatattc atcatagact 480
tatggctttg gggtgacgca gagacaaaca ctgttgtcat attactatac tctatcgctg 540
ctctttgtta atatcctttg gtacccattt tttaatatca atgtgctgtc tgctggatat 600
cgtcatatgg atcacatcca atatgcttat agccaatttt cgcgcaaa 648

```

(2) INFORMATION FOR SEQ ID NO:146

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 673 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...673

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:146

```

cagtgggtgat ccgagatatt catagaaaag cagtgcgacg atacgaagac tgcgagtgga      60
tccaaaatca agtacattat attctctgac agcctcaccg tcagcgagct atagagattc      120
aaaagttgtg cgccggcagg attaaggcag ctttggaatc ggtaccaatc tgaccaatga      180
tgtggggggg ggcgtaagcc gttgaatatc gtaatgaagc tctggaagtg caagatgacg      240
gcgaagacga ctggcactac tgtgtaaagc tgagcgacgt cgatggtaag catagggaga      300
gccggaagaa atcctttttg cgatgaatac actgggtatc aaacgaaata atgctgacgg      360
gactattctt cggatctttc aatccgatgc attcgggtcat ttggcactgg ccaattatct      420
gacagaatac actccgatcg gcagttgtgg ttcgtaacaa gcccgttgaa ccctctaaaa      480
aatacccaaag gctgctcccc tacgatctgc gttgcgagct gatagagcaa gccattcgta      540
ggatatccgt tttcaagttc tgcgcattga agagctgctc ccttctccca ctacacgata      600
cggacgcttc gtgctctctc catgctgtat cctcatctcg gttcgccctc ctgatcgggg      660
cggacaactg gca                                     673

```

(2) INFORMATION FOR SEQ ID NO:147

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 556 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...556

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:147

```

cggagatttc atacgagcaa ggcaaagaat cgtatgcccg cagcaaagac ttttcgacaa      60
atcgggtcatc gctctcgaag agttcgaggc agccgaggaa atttcgcaa aatcaaagag      120
gaactgtcca atgcgcgtga agccatgaga tcgtaaagaa aggtgccagc agccgtacag      180
ccaaacagag caataccttg tgcgcagcac ggtaacaggt aagatcctga atgtcccggg      240
caaaggggta attcgggtcat tcaggccaat acgttcaacg agggaacgac catccttcga      300
tagcggatat gaacgatttg atttttgctg gcaagataga cgaacggaag tcgggtcgcat      360
tcgactgggc tctcccatgc gcatttcggg ggagcattgg ggaaagaaag ttttcctgcc      420
acagtagaat accttgcgcc cagggaagta tcagtaaacg gagctgtact gttcgaagtg      480
aaagcttcgg acatattcca agcgacagag taatccgtgc cggctatagt gccaatgcta      540
agatcgctact cgaagg                                     556

```

(2) INFORMATION FOR SEQ ID NO:148

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 713 base pairs
(B) TYPE: nucleic acid

(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...713

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:148

ccaaaagggt	acactctcgg	agcaatacac	gatgactcgc	cgcttgacaga	agcagccggc	60
acccctctcc	tcatagcact	ggacgggtgag	tgggggtttca	catgcgtctg	aaagatgccc	120
cacgcttccc	tcgcaatatg	ggcttggaca	ccaaaaagac	aatcagctcc	tctacaacta	180
tggtcgggag	gtagcggcca	atgccggctg	atggggattc	atatcaattt	tgctccgggtg	240
ctggagtga	caacaatccg	aagaacctg	ttatcggcac	gcgcagcttc	ggcgcaaccc	300
acgccgagta	gcagaaagag	ggattgccta	tgcacaagga	ttgaggacgg	aggagtgatg	360
gccgtggcca	agcatttccc	cggacacggc	aaaccacaga	ggactcgcac	aagaccttgc	420
ccacggtctt	tgccctccga	gggaattgga	gaatactgaa	ttgttcccct	tcaaggagtt	480
tttccgagcc	gcctcagcgg	agtgatgacc	gctcacctca	atgttccggc	tttgaagca	540
agaaaaatac	gccctcctnc	ctcagtcatg	ccatctgcac	cgatctgctc	ggcaggaaat	600
gggtttcaag	gggctgatct	ttacggacgg	actggcctgc	caggagtaca	gaccagccgt	660
tcttaaaccg	atcttccgcc	gtgccaattg	gccgcaatga	catccttctc	ggt	713

(2) INFORMATION FOR SEQ ID NO:149

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 465 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...465

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:149

gacgatgatg	atgaatatgg	agcgtcggag	cggaaaaaatg	aagcccgtgt	tcgaaaagca	60
ttgggtggata	tggtatggtga	accgtaccga	gcattgcgga	gatgcgtcgc	gaatgggcgt	120
tgagcaccga	gtacgtttac	cccggccgat	acagttcttc	ggccccgaac	atgtatgcga	180
tagccccacg	atgacatccg	cttggaagaa	aacgatcgct	gactcttccg	ctgcattagt	240
cgggtgataa	gcagttgctt	ctgtttgttt	tgctcgaaaaa	aaatgttttt	ctttcaataa	300
gtctcattta	aaagaatcgc	ctatcgacgc	atatctacct	tctaacaata	aataaagagg	360
attctcctat	gagcagtttc	cacaagctga	ctatgatgaa	ttggtcagcc	tttatacaga	420

aggatgcatgaggcttttcg agtcatactg tcccgggtatg atgct

465

(2) INFORMATION FOR SEQ ID NO:150

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 670 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...670

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:150

cgctggaaac	ctgaaggagg	tgtgcccag	gtactggaga	ttccggccgg	gagcaagaca	60
aagcgaaaga	aatgcatcag	gctttggtg	aggctgcgc	gaaaacgatg	agagcctgat	120
ggaaaaatc	ttcgatcagg	gaagtcttct	gaagaggaga	tgcgcgatgg	tatccgtgcc	180
ggtctgatct	cgcaggtatg	taccccggtg	tctgtgtcag	tgccggagaag	gatatgtgtg	240
tgcgcgtaca	ctggagttcc	tcggcaacgt	ggttcccggc	gtgaacaaac	tgccgcacct	300
gtggctgtga	gcggagagga	agtgaacccc	gatgcttcgg	ctccctttgc	atccatttct	360
tcaagactac	gatagaaccg	catattggtg	aatatcatat	ttcaaagtaa	tgagcggtag	420
cctcaccgag	ggagtagatc	tctcaatgct	gaccgaggct	ccaaggagcg	catcagtcag	480
atattcgtgc	ggccggacag	caacgcacat	agggtggacca	gatgtgtgcc	cggcgatatg	540
gagctactgt	gaagctcaaa	gaggtacgcc	gtggcaatac	gctgaacgaa	aaggcgtgga	600
gcacgttttc	gacttggtca	aattcccag	cccaagtccg	tcgtgccatc	agggctgcca	660
acgaatccga						670

(2) INFORMATION FOR SEQ ID NO:151

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 963 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...963

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:151

accgacagga	taggtttctc	cggataggct	tccatagcct	cgataacgca	tcggaagaaa	60
gggctgtcac	gcggaaaggt	ttcggcactc	tgcttgacgc	ctgatgatgc	aggctattga	120
cacccagcag	ctcgccatcg	cttaggcaag	tattcgtgcc	aagacggaat	cgccctgtaa	180
acggacttgg	tgtgccccaa	cgatatgggg	attttcggat	taagccctac	cggattttcc	240
gactggcata	tatatcctga	tacattcctc	cgccgaaagc	tgtcgcaagg	agttatgccc	300
ccggcaaata	ccgaggatcg	gcacattgcg	gcgagtggtt	tctccaccaa	tagcagttcg	360
ccccgatctc	gctcgggatt	gacttcgccc	aggtgggaat	ggggtcttct	cccaaatagg	420
acgggagtaa	atcgtcccca	cggaaagaat	cagcccatcg	atgaacgtgg	cataatgacg	480
tatgacctct	tatccgtagt	caaagggata	agtaagggtt	aacctcccgc	acgtattacg	540
actcggata	ggctctggca	atacacgagc	ccgaggtatt	ataattcgtg	tcaaaccaat	600
aacaggtcga	gagggagact	ctcctccctc	aaaagctgcg	gcgcaccgtc	aagctcttca	660
tagagctgtc	ggagcgccgc	aggatatact	gatagttctt	aggactaagc	atctattctt	720
gcataagtag	catttcttct	ataaactccc	tgcgcggacc	tacctcgtct	cccatgagca	780
tggaaatatg	gcattctgct	cagcagcatt	ctcgatcgtc	accttacgaa	gcgccttttc	840
tccggatcca	tcgtcgtctt	ccaaagctgc	tctcgtttca	tctaccaagg	cccttgtagc	900
cttgtagcatg	cacacgggtt	tcattaccat	cgcataacgg	tcgacaaaac	cttgacgctt	960
gtt						963

(2) INFORMATION FOR SEQ ID NO:152

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 682 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...682

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:152

acgttgccct	gcgatacctc	catactgctc	aaacgagctc	ctcacacgcg	cgaatgatcc	60
gtctgcgtcc	gcactccttc	gccgaaaccc	tgaggcgtag	ctcatgtggg	gagcagccgt	120
aagataaaga	cacttgcgac	ggtggacacg	agccaacgga	cacttaccat	agactactcc	180
cataatggaa	gaaaatcaac	catggtgctg	cgcaccgaag	atctgggtcaa	acgctaccgg	240
aaccgacggg	cgtgaatcac	gtatcgatag	aggttcggca	aggagagatc	gttggattgt	300
tcggggccgaa	cggagccggc	aagacgacga	ctttctatat	gacacggggc	tggtcgtccc	360
caacgaagga	cggatatattc	tcaatgatca	ggcatcaccc	aataccccgt	ctacaaaacga	420
agcgcgtgcc	ggcatcggtt	actggcacaa	gaggcatcca	tattccgcaa	aatgtccgtg	480
gaggacaaca	cctctccgtc	ctcgaaatgg	ccggactgcc	caagacctat	cagcacgaaa	540
gctggaaagc	ctgatagccg	aatttcacct	tgagaaagta	cgcaaaaact	tggcgaccgn	600
ctttcggcgg	cgagcgacgc	cgtgccgaga	tagcccgtgc	tggctatatc	gcctcgtctc	660
atcatgctgg	acgaaccctt	tg				682

(2) INFORMATION FOR SEQ ID NO:153

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 973 base pairs
- (B) TYPE: nucleic acid

(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...973

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:153

```

aacgatacgc ttaagctccc accggagaag attgtccgtg gtgcagtgcg atcgtccaga      60
tgcagacggg taagaatctc ccgcgcgcgc tgttcgtatc ccacgcgcca agggcatcca      120
tttcggggag caactcctcc catgcgttgc cgtcgccccc agccgaagcc tcctccatt      180
gcgctatcag ggaggtatct catcgttgtg tccgaagcag gtctccagta cggtagtgc      240
cggaataactt ggggaagctg tggcaggat gcacggcgga taccgttttg gtagtcactt      300
ctccggaatc gggtagtgcg attcccgtaa ggatattcat caggtcgttt tcccgttgcc      360
gttgcgtagc ataagtccaa ccttttcgcc ctttcgatac tgaaagagag gtcttcgaag      420
agaaccaaact cgcgcgaaact ttggtcaagt gctgtgcctg aaacatgctg tcttttagatg      480
cagtagtggt tcaatccttc tgtttgtatg cctgataacg agccattacg ctgcgtacaa      540
gttgatcgtc tccgcacctc gcagatagcc ggagcgacag acaggatctt atagtagtta      600
gggtctttct tgaggcgcat gtatgcctcc acgttatgtc ccatacgttg gggttgcccc      660
cgtacttcgc agccaaacgc cttgcgcgcg cactgacccc gagccggcat tgtaggcagc      720
gagcgtaaac ttgagtttct ttccggatcc gttacatcgg gaaattcgtt cttgaacgcc      780
aacagcatcg gatggagacc gcgtaccgaa acttccggat ccagaagtcc ctggtgtcgg      840
ctccgaagcg tcggcctgtc ctccggcatga taccatcaa actctggcac cggaccagcc      900
tacgataccg gcattgagcg cgaatccgtg gaggcgatgg atgcagcaga tgccaagacc      960
agccgagccg aac

```

(2) INFORMATION FOR SEQ ID NO:154

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 343 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...343

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:154

```

tgatcgccat attgtcccaa gagcataagg atatggagga gaaagtccga agaaacttca      60
ggaaatgata gcggatacgg atcatcgtct ggatatgcgg atcggcagac cgaccgaaag      120

```

```

atcaggatcg gcagaaagaa tgccggctgc cgaagtcggg tgtcatagcc gactggctgg 180
tacgggatat gatgcgtttc agcccgtggc gaaagacacg agtggcaagc ctctgaacaa 240
tagcaggcca acagcaccga ataccggatg ctacagcgcg ccctcgccct tttcggcgag 300
agaaagagcg tctgacaccg tatttcggcc agatgaatct gac 343

```

(2) INFORMATION FOR SEQ ID NO:155

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 664 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...664

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:155

```

ccccgaatc agagcagtat cggatcgacg ttgtaccaga taaagccgtc aaggtgtatc 60
ggacgaagaa agcggtagtg gacgggtgtcc gttacagcgt cagcggaatg tcctgtgcaa 120
tgatgtcgca tgcaccccggt cgcaaccttc aaggctctct ttccaattct tttccagacc 180
gatttctatc cgaatgcact gatttccgat aaacgacgtg ctacatcgta aacaaaaccg 240
gcggtgaatc ctgtcccaca taatagtctc tgtcattgta tcgggcaatg atcccagcac 300
ttctttcttg ggnaatttt cagggataat cagcgaacga atcacagcgt ccccaccggc 360
agcccctcct ccaccacagt ggcgcaaagc aacatcacga taaggacaga gatcagtaaa 420
acgccgtaga gagcaatctg ttcttcattt ccatttattt attgaagtcg atggcaatac 480
ccatacgtag ccacgagggt tgtacggcgt atgcaccaa gagaaacgct tgctatccag 540
aaagcctcag ccagattgtc atttcaaaga agaaacgtga gcgcttgagt ggatattcac 600
ataagcattc atcagagggg aagaccctcc acctttactc ttgttgcggt gtgaatgctg 660
tacg 664

```

(2) INFORMATION FOR SEQ ID NO:156

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 656 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature

(B) LOCATION 1...656

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:156

ccgaaccaat	ggcttggcta	tatgccggag	gcgatcgtag	aatcaacaag	tgggtgggga	60
ataccggcaa	tgctgagaat	aagccgatca	acttcttcgc	ctgacaactc	gcggtggact	120
tgtatatgac	gtgccgatta	ttacgcagaa	ggtgctattc	cgggagggca	gtacttacct	180
tttgccaaag	gcttatggcg	gataagccga	gttatacggg	ttataggaat	cgtcattaca	240
tatatgtatc	aagacgctgc	cggataagat	agaagtgaag	tattctatct	gcgatggaat	300
tttagtacct	aacgatactt	atatgggcta	tggctacaac	gtggagtcga	tgagcaaggc	360
aatgtcacca	ttactaatac	gatgcagaat	tggatcccca	tgttggtgaga	ctcgttgcta	420
aaaatggctc	ttactttggc	tccagcctac	cgatacttcg	gttgagtttg	ctgagtttagc	480
caacgggtgct	cgcaaacatt	caaagtaaat	aaagatgctg	tggcggtcgg	ttctgcttac	540
tggaggttta	ttacaaccgg	gatccgaatg	caacagggtc	gttccggaaa	agttttatca	600
agaaatagac	agacttatga	aaaagtattg	gtatatgctc	gttgctaacg	agtgtt	656

(2) INFORMATION FOR SEQ ID NO:157

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1128 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1128

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:157

aagggtttcaa	tttcgcacaa	tgagagatcg	tttttttgtg	caaagggtgtg	tttctccttc	60
tcgagatatg	tcactcttaa	ttccattatt	tcgtcttaga	accgaacaaa	ggtagaattt	120
ttaaggagaa	ggataaatga	aaaaacctta	aaaacatgaa	agtaggagat	aagtgtgaga	180
atgagtgcgc	ctgatcttgt	gatcggcgca	ctcttttcgt	tgtttgggtc	tatggacagt	240
ctattgtatc	cggatcgat	tcgggttaga	gccctcctcc	tcctgatccc	tgatgccacc	300
accggtttga	gaattgctat	cgctgcatt	ggcagaagca	cctccggaag	cggcttgccg	360
tactcggcga	acttcagatc	cggagcgatc	aggtacaatc	ccgttcgcga	gtgaccgtat	420
tgtaacgaca	ctctgccctg	aattgacctg	aacggagttg	aactgggagg	ctttcacatc	480
ctctttcttc	ccactcccga	tcctttggcc	tgtgcaatga	gacggaacaa	accgatgcct	540
cgaacttgat	cttcttgccc	gaagccaatt	ccctgcgcac	gacgatgcca	aatcgcgcat	600
gataccgaat	acatcgcccc	ggctggctcc	cgaaagtctg	agatttggtc	tgcatgtgtc	660
agggtggagg	caatgctgcc	gttgatactg	tctgcggata	ccacagcttc	ttgcctgttg	720
ccttggtggc	aatacggatt	gtcttctttt	gaagaataac	ataataattg	aaagaattaa	780
tgattaataa	tgcggacttt	ttctgtccat	taatttaata	atagcaatcg	agaatcgatt	840
cggcgccatc	ctcttctctc	tgtttgcaat	gcaaagataa	ggtaaagaaa	ctgatcgctc	900
aaatgttttg	cagaaaaaag	ttttcaacaa	caagggcgct	ttacgcttta	tatataaaac	960
ggcttccgta	tttcttatac	aaggcttcga	agcactcttc	cggctttcgt	aaggggagct	1020
gaaatccggt	attcggcggt	gtccgaatga	tttatatata	aagtattttc	gattaataat	1080
aaatcgattt	ttattttatat	attaatcggt	ttcatttttg	gggatccc		1128

(2) INFORMATION FOR SEQ ID NO:158

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1021 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1021

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:158

```

cttgatttgt gcatgttcaa ttgtttgctt cgcacagggt gtcggcttag cttcgggagt      60
agatacagtt tcattcagag tgattgccgt aggagtgacc tgatcaaacg gcgacgatag      120
agcattccga cagccatttt gaacgtttct tgcataacc ggtatgttgc ataatttctt      180
cgggcgaact cttatcccga tgggaagccg accgcctctt ctttgagaca tgtgtagcag      240
tcgttgctct cggagtcagt acggtcatag cctatcggtt tgagcgagag gtcgttttac      300
catcgtcacg gaggcgaatc acgaaagctt tcacttggtc cccatagcca aaggcatcgg      360
tagcgtatcg gaatagatca tcccccaatg ggatgatcca cgatcatgcg ataaccgcga      420
tcgattcggt cgtaaaccag tccgacacct tgtccccagg ggagtaggat gggggaatgt      480
tgcccaaagt ttggacaatt tcgccgagcc aacgatctta ccgctcacat gatcgatata      540
gcatagacga aatagcgtcc gccttctcga atgagctgcg tctgttctga aaaggaacga      600
agagatcctt gtgtatgcc cattccatat acgcccccta tctgtgacgg agacggcatg      660
cagcagagcc acctgtccca cttcgaaagc ggccgcatgg tggtagcgat gagtctgcct      720
tcattgtcat gatagcgaat acctccactt ccataccagg tgcagcatct gaggggaggt      780
agcgttgggc aacaaaatat ccgtatcgcc tccatcgaga tatgccccaa tggtagcaga      840
cggtagatgg tcagacgacc tatgcgtccg agctggtatt tgcgcgttc atcctccggg      900
attactcaag cgtaactgac gattcgtcgc gaggacgggt tgcacaaaa tagattcggg      960
cataccatcg cgctgcacct aaagacgcac gaagtaatct gctggtcgtt tacgtacgaa      1020
c                                     1021

```

(2) INFORMATION FOR SEQ ID NO:159

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 735 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...735

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:159

gatctccttt	tttcatcggt	agctgtttcg	tttttggtat	agggtgaata	caaagaggct	60
gtgctcttgc	aggatcttgg	aacctgaaag	cacagcctgt	ctattgctgt	attacatgag	120
accgcgagcg	cggagcaaat	ccctgattca	ggcttttgca	gaccggtgaa	cgcggtgaag	180
atcacgttga	aatccttgta	ttgccacgcg	aaagaatcat	atcccgaagg	cgttgtccgt	240
tttgcgagtc	ataccaccgt	tttgacccat	ccattgataa	acgttgtgat	ccagacttct	300
gtccacagat	aagcgtagta	accggatgca	taaccattgc	tccgatatgg	cggaataaag	360
aggagcgata	gcgaggaggt	atctgcggat	tgagagaccg	actttgcgca	gggcttcttc	420
ttcgaacttg	gccacgtcgg	tatggcctcc	gnctcttcga	ccgtgagcgt	atgccatgcc	480
tgatcgaggc	tacggctgca	agattttctc	ccatagaata	agcctgattg	aagtcgctcc	540
atcctgaatc	ttcttgacca	attcgcccg	cataggctcc	tgtgtcttca	gtgcttagcg	600
tagttggcaa	acacttcgg	atccatagcc	caatgttgnt	gagctgagac	ggcatctcga	660
cgaagtcacg	cgccacattc	gtaccgagag	caaaggatac	tgctgggcgg	gaaacatacc	720
gtggagggca	tgacc					735

(2) INFORMATION FOR SEQ ID NO:160

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1093 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1093

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:160

cgggcctttg	ctgttttctt	cgctgagtac	ggcacatgcc	gatatgccgt	ttggtcttcc	60
gtcatccata	ttctttgggg	tgtcttgcc	ctgggtggtg	tcctctattg	gctgcttgga	120
tcattcggtt	cacgagccct	cggacactgc	ccggcttctg	cgcattcccc	aaatggcttt	180
ttggctatgg	gttaccgcgt	ggctatcatc	atggccaaaa	cgacaggcta	tgtgatggca	240
caaggtccga	cagcatccgt	ttggagctgc	tggtggcggt	gggtgggtctg	cttacttggt	300
gccttgcaat	tcgggttggg	cangtggtca	agcaaacgat	attgaaagag	agcattacgg	360
ccggtcaggc	tttgggacag	aaaaacacgt	cggtgccatt	tggatgtcgc	ttacctattt	420
gaatccgata	gcttctatcg	ccctgcaagc	tatgtggtat	ggcaaaaattc	gctcaattcc	480
atccaaatct	gctatacgat	aaacgaaaga	ataaaaaccga	cagacaatga	aactaacagc	540
cgatggttac	ttccatcagt	gaggatgaga	agggcaacat	agtattcgca	atggacgctt	600
ggagcttgac	gaattccgac	tgagtggcaa	gctgaaatcc	gaatcgaaat	acgctggccc	660
tacgaagccg	acgaacaagg	tctgccacag	aatcggcagg	caaacggatc	gaagagatcg	720
agctgctcat	ccgtaggcta	tggaaaagga	caagttggcc	atcatgacag	gcaactatac	780
cggagcggaa	caaagtattg	ggtctattat	gcccgtaactg	aacgagtatt	cggaacggc	840
tcaatgaggt	gttggccctt	tacgaaacat	taccgctgga	gaagaatgcg	aagtcgatac	900
cgactgggaa	gagtacctcg	atatgctctc	ctgaaagacg	aaaattcgat	atagccatta	960
tgccatctct	ctgtggcgag	ggagctatct	tttattggctc	aagcttcnga	accggatcga	1020
cgataggatg	attgcgcgga	tggtaggtct	cgatttcatg	ccggagtgtt	tctctgtcat	1080
atgggtatag	atc					1093

(2) INFORMATION FOR SEQ ID NO:161

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 721 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...721
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:161

```

tgcaggctcgn ctctagagga tccccgaccc acagcatttg cgtcacggta ggggcgactc      60
cgtaccacaca aatgcgcgga tcagaacgat gatacaggca cgacgttgat ggtcatctga      120
aagaggataaa aacggcggat attccgaaaa gcgatcgtcc ccacataacg gctttggcaa      180
tgctgctgaa agaatttcca gaatggtgat gtcgctcgcc tctttggcta cggcagtgcc      240
atcgccatcg agaggccccac ctgtgcgcgg ttgagtgcag gagcgtcgtt cgtgcgtcgc      300
ccgtcacggg caccactttg gagagcttct tgcagcaggc gtaaagcctt tccttgtcca      360
tcggacgagc gcgggacatg atacgcagtt cgctatccga gggcgagtt cctcgtcggt      420
tagggctgcg aaatccgacc cgtgatcata ttccgctccg tacagctttc gtcccacagc      480
cctatttggc accgatctcc cgggcggtac ccggtgtatc gcccgttacg attttcaccg      540
aatgccggcc ttcatacagt cgctgatcgc ttcgggaacg tcggagcgat ggatcggcta      600
tgccgactat acccatgaag cggaggtcac gcacgtgaga cgcccattgg caaatacctg      660
ctcttgtcgg aggacagctc ttgatgaaat ccgatggtac gcattgcttg cctgatttcg      720
g

```

(2) INFORMATION FOR SEQ ID NO:162

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 637 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...637
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:162

```

cggatgaaca atacgtcaa gaactcgtgg cacatctcct cttcgaagcg tcttttgatc      60

```

aagcactcct	ttctgtagaa	caagccgtgc	gcatgtacac	gagggcgcgtc	cacatcaagc	120
tctaggggcg	aaaacgccta	tgcaagtatt	gcgccagagt	ctaaaaatcc	gttactggca	180
aggatcgaac	attggcggag	attgcccccg	agctataaccg	aaggatgaat	gtcagacaaa	240
gagctacttt	gctcgtgtca	accgaaatta	gacttaaggg	taaggggtgt	caactaaagt	300
agaattatag	aaagaaccag	taaaccaatt	gtagaactat	ccccccaact	gtcaactttt	360
ttcagtacac	gtcaagaaga	gaatactaca	gacatcatac	tgctatcggg	atcgatcggt	420
cagggatttg	ctgccggagt	gaaagactgt	cggtgccaag	cgcacgatg	aataaggaga	480
tccctgtact	gtagtgttgc	cggatatagc	cttggcgagc	gagggcggag	attgccccgg	540
gtgtacctgc	tgcatggcta	tggcggaat	gccgaacatg	gctaaccgta	aaccggacct	600
ccgcagatag	cagatcaaaa	agggatcatc	ttcgggtt			637

(2) INFORMATION FOR SEQ ID NO:163

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 652 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...652

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:163

gctcaacaag	agaagcaggt	gtttcatttt	ctgaaccttc	cggctactga	caggctttgg	60
ctgccggagg	caaagctatc	accatcgtag	acgacaatcc	ggactggctt	ttgagaatcc	120
ggctctgctc	ggatatgaat	ccgggtggcg	gcctttcttt	cctattttata	ttatatgagt	180
ggttcgcata	tgggcatgcc	tggtatgcct	cgctccgtcg	agagcgtggc	atgtgggggtg	240
ttggctgcgt	ttcctgaact	acgggtctat	gcaaggatac	gatcagaatg	cgatgccacc	300
ggctctttta	gtgcttcgga	tatagctgta	caaggatttt	acaccatgaa	ctgagcaacc	360
acttccgcgg	tggagtcagc	ctaaaagcat	tgattcttct	atcgagacgt	atagttoctt	420
tggccttggt	gtggatgtcg	gatcagttat	tacgacgatg	acaaaggata	ttcggtttcc	480
gctctgttca	gaacgtaggg	gcgcaactga	aaggctataa	tgaagaacgg	gaaccgctca	540
ttgggatttc	cagctcggct	tttccgcag	ttttatcaat	gctccgttcg	cttgacacac	600
acgttgttca	atctgaatcc	gcactatttc	aagcgtctgt	accacgcgat	ct	652

(2) INFORMATION FOR SEQ ID NO:164

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 715 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...715

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:164

```

tgcccaattc tcacggttc gtttgaatcc ggaatcctg ctcagcatac ggaagcctgc      60
tcctatcgga ggaagaggca aatgaaaaag gcaaggccct aacggtcagg cattcttttc      120
cgtcgcgtac gcttatcaat tgttccctct gttctttgcc aggacaaagt cgtcgggctt      180
gaagaaatct gcaaacgcga ttgtgctctc ccgcattgca aggagtatgt cccggtaata      240
aaggactgat gtcagggtctg acttcgagat gtcggaatgt agtgccatca agccattgtg      300
cgagaagtca ttgcgcagga aatcaagtaa agaataaagc tcttgatcag cctttgggcc      360
gaatcgggat ccacaccggt cttgctatca tgtctttttc gatctgacta tccggatcga      420
aataatggag gaaaggcaga tgcgtctgct atggccatag actttggtcc agcgatcgac      480
ggagagcagg gatcacaaag aagagattgc ttgagcgact cttcattcaa tttcttcttc      540
cgaacttaat gcgaacatga ctttcgactt ctatcaaatt ctctcgtgga ggttgagata      600
aagtccgaag tactgcggtat cgtcttccac tgtacggatt gacctttgtt ttcagaagca      660
ggaactgtat tcataggttt gagtttcttg ttctatcagc gatataataa atgtc      715

```

(2) INFORMATION FOR SEQ ID NO:165

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 724 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...724

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:165

```

cggccgttgc agaaggagat gcaaattgcgc agcgcaacct cgatatgctc ttggcaaaaa      60
gtaagtggag ttttccatat tgattattaa ggtgcaccgg acttctgttt cgggtgctctt      120
ttttgtggca aatcaagtcc gcatgcacaa tgtttttatg tgccaaaagt tttcaacgac      180
gaggaggaat ttggaacatt ccagataatc ccttttatga aaaccgaatt caaggagaaa      240
atgatgtgtg atgatttttc ggataggaag gcctttttcg tcagggtcgaa caacattcca      300
cccaacctga accatagacc cagaaaaaac taaacttttag aaccttttcg agtgcttctt      360
gctaaattta tcttagtgtt gcatttggtt gtggatgtgt acctcaaata gtttaggaga      420
ctattgaaga aaaaggatta tttcgcgagg taaaatgtag gaatacaata agattcacac      480
atcaagatag atggcacaac aggaagatct cttcaaaaaa atagtctcac actgcaaaga      540
tacggcttcg tctttccttc gtccgagata tacgacggtc tggcagcttg tacgactatg      600
caccaaaatcg tctgaactga agaacaatat caaacgcact ggtgggaaaag tatgacctg      660
cttgcattgat aatgtggtgg gcatcgctct gcatcttcat gcatcctcga tctggaagct      720
tcgg      724

```

(2) INFORMATION FOR SEQ ID NO:166

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1079 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...1079
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:166

```

aacaaggatg ctccatctgt catttttcca ttcgttctga ccgaataggt gtagttgttg      60
atattctgat ccaattcggg atagagggga atggtattcc attggcatcc tcgccggtct      120
gccatgaaag gatgggcac acgtcatgag ttcatcacgc gtatatccgg ctccgaacaa      180
aagttgcgaa ggcattggag gaatttgtcc aagtcgtagc tgtactggat accgcccata      240
tatgtttgcc ttgggtcac ccataattat tgccgtattg atcttgaggg ataggtagcc      300
ttccgtacca ccggggtggc cattgacgtc aatctctccg ataactccgt atagctcttg      360
cgatttacga tctgtccgga agtataagcc tgaagtgggt tttatagttg gaagagaaga      420
gatcgatttt caagtttccg caaatacgct atggtcagtt tggtcagcta caccactac      480
gtgaggaggc aatcgatacg atcgccacca cggcggaatt cactgatcgt gtgaaactcc      540
ccgtcaattt gctgtagtcg ctcaagcgca aataagaatg cgctcccacg agcgggcac      600
tattttaccc aattcggaat aaccgtcatt gttagcacc aatgggttgc gtaacgagcc      660
tgcccgaata ccatggcacc ggcacgttgt catcgctgac gatggaggca ttgaagttcg      720
tgttgttata cagctgctga aaccggtaaa gctcagagat tcattgaatg tgaaagaatt      780
gtgaaagggt ccttggtgat gatattcacc actccggcaa tagcagaaga acctacaagg      840
ccgatcctcc accacgtact acctccacac gttcgatcat atggcaggga tctgctccag      900
accgtaaaca ccggcaaggg cactcatgat ggacggctgt cgatgaggat ctgtgcataa      960
cgaccatcca gtccattgat caacttgatt gaaaccacag ttctgacagt gttctctaca     1020
cgaactcccg ctggatgaca agccttgagc cagttagaag catgacttgc gagaagact     1079

```

(2) INFORMATION FOR SEQ ID NO:167

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 290 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...290

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:167

cgggcttcca	tattggaagg	atattcgtac	ggtaagcgta	aacaaagaac	ggcgcgttcg	60
tcctttatga	cctatgccga	ccgaagcgaa	gctctcacgg	caagtatgag	aagagttcgt	120
actaccgtct	tctgaacggc	acgtggcatt	cttttatgcc	gagagcgagg	cacatctgcc	180
tgccggcata	acggatgctc	ggcaaataca	aagggatggc	ncgacatcca	agtncccggc	240
aactggagat	caagggcacg	gngtggccat	ctataccaat	cacggatacg		290

(2) INFORMATION FOR SEQ ID NO:168

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 664 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...664

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:168

tgtattggaa	ggtaacgaac	ctatcgttat	tacaaacagt	gagggcaagg	cacaacgccc	60
tcggtagtgg	cttttgtgga	tggtggcgag	cgtaaggtag	cgatccggcc	aagcgtcagg	120
ccatcaccaa	tccgaccaag	acgatatctc	tatcaaacgc	ttcatgggcg	aaacttacga	180
tcaggtttcc	agagaatgga	gagagtgcc	ttcaaggtag	tacgtgggga	caataatact	240
ccgcggtaga	tatagacggg	cgtctctata	cgccgcagga	aatttcggcc	atgaccttca	300
gaagatgaag	aagacggccg	aagactacct	cggtcaggaa	gtacggaggc	cgtgatcact	360
gtgcccgc	acttcaacga	cgctcaacgt	cagcaacgaa	agaagcagga	gagatcgccg	420
gcctgaaagt	tcgccgtatt	ggaacgagcc	tacggcagct	tctctggcct	acggtctgga	480
caagtccaat	aggatatgaa	gatcgctgtc	ttcgacttgg	gtggcggtac	cttcgatatt	540
ctatcttgg	attgggcgac	ggcgttttcg	aagtgaaatc	gaccaacgtg	atacgcacct	600
cggaggagac	gacttcgacc	acgtgatcat	tgctggcggc	agaagagtca	agtctcaaga	660
aggt						664

(2) INFORMATION FOR SEQ ID NO:169

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 450 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...450

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:169

```

cgcgcggttg  catctactat  ttcaaaggac  cgggacaaaa  cagcctcgtg  cacaaggaat      60
agagaccctg  ccttctattt  ataatgtatt  gcgcaagagc  agagcgaagg  ctatgatctc     120
accggattac  ccaccgatga  agcagcttcg  aaaagatcat  catgacgcaa  ggagctatctt    180
tcaatagcta  tgccgaggca  atctggcacg  ctttaccgaa  agcggctatc  ctgcattcgt     240
acccaaagtg  attgaagca  gtggatgcaa  gaagtcctta  cacccaatca  aattaacatt     300
tgcaagaacg  ctatggagaa  gctcccggag  aatactattc  gatgagcaaa  acggagtagg     360
cggcatcgg  gtaaccctg  tgcaagttcg  gcatgtcgtt  cttttgcctc  agcccgtaca     420
aggtggaagg  ggccaacgac  ttcaaggccg

```

(2) INFORMATION FOR SEQ ID NO:170

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 501 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...501

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:170

```

ttatgcctca  aaaattttat  attcaaaagt  ttttctccca  tttcaataag  cttttgacat      60
tttcttctgt  tgcaggctgt  attttatgca  ctocaaatct  ttagcgatat  caggagatag     120
ttttagcaat  tctcttcctg  tctgattatt  ccaatgatta  caagcttggg  atatttgggg     180
ttggcaacat  tgtctgtgca  agctttgcaa  tattagacaa  acgcaaactt  caaatgggtc     240
aacaatctat  ggaaatcacc  tataacaaaa  tttcctccct  cttcaaaatt  actataatga     300
gttgatttat  tntcgtcgtt  tcattcttat  ttcttgctga  caatattcaa  aatgtatttc     360
ttcttttatg  tcagataata  tcttcaaaat  agagaagtct  tccctgttcc  agtttgctcc     420
tctatgataa  ctggcttctt  ttacttggtt  catcaattag  aattttcgta  gtagtttagn     480
ggttcgacat  tgtaagtgc  g

```

(2) INFORMATION FOR SEQ ID NO:171

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 566 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...566

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:171

cggcttccat	gtccgtatat	ataatagcac	gcgagacaga	aaccgcttgc	acttcatgcc	60
cgttatactc	ttgaagcccg	tatagtagtc	ccagcagcat	ggccgtatat	ccgagagcta	120
ttggccatat	gcaggggata	gccttgagtc	ggcctgagag	tacaaaatcg	tttctgtcaa	180
aagccaaagc	cagcacagaa	aagactcagg	catactttgc	aggcattcgg	gatacgaacc	240
cccgtttgcg	aatgtccata	ttgagcgggt	aagcgttgg	caaattgctc	acctctccaa	300
aaattctcca	ttcacgggaa	tgaatacctc	cttgccggcc	ataccggacg	aacaaacaga	360
taaagcatgg	aatcacgaac	cgaaacttcg	ccaagggcaa	gagttcagga	aaaggagagc	420
gttccgtacc	gtaaatacct	ttccatacat	atcgagaaat	tcgcccattg	ttcgacgac	480
ttcggattca	aaggcaatat	ggagccattg	ccttcatgac	cgatgttcag	cagataattc	540
ccccacgaca	caccactcgc	acccaa				566

(2) INFORMATION FOR SEQ ID NO:172

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 386 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...386

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:172

aaaagagatc	ggaagacagc	gaaaagagat	tgggaaacga	tttatatacg	aacgaattcg	60
atztatatat	ttatcatttt	cgatttatat	ataaatcggt	tcatttaata	tatagattgt	120
aaagtgtttt	atatataaaa	cgagaggaga	aaaggcctct	tcgaccgatg	aaataaaaag	180
aggcaccac	ccaagtcgcg	accgaactcg	ggcgagtgc	ttagtatctg	acagaaatgt	240
cgggacttat	tcgcgcttgt	acatcacaaa	ttcggcacaa	gcgtcctcgc	tcgacgatta	300
cttcatgtta	gtcttcccag	cgtacattgc	gcatgtcgcc	gctttggcca	attcctgatg	360
gaaagcaaag	cagcagtcca	gatoct				386

(2) INFORMATION FOR SEQ ID NO:173

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 915 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...915

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:173

gggtagcgga	ggtctctact	tggatcatta	tcagggagat	ccgaccgtca	gcctgttgcc	60
atcggagggt	atgctccatt	ggagcaagt	tatgcttaaa	tcctttgccg	aaagaattgc	120
cggccgataa	gcctcgctac	gtgctcgagc	acaggccaat	ctgtgggcag	aatacctcta	180
tacttccgaa	cgatacacta	tcaggcctat	ccaaggctac	tggctgtggc	agagcttacc	240
tggaccggtt	ggccaagaaa	gattttgccg	atttctgtcg	ccgtttggat	aatgctgcgt	300
tcgtctggac	atgcatggta	tcaattacca	cattccgctg	cccaacaacc	gggtggctct	360
tccgacttta	tagcctttac	ggacaaggct	aactgacctt	cacgacatcg	cgtccgatga	420
aaatggtcta	tacgctggac	gaaccgaacc	gaccctcaca	tcgactcctt	acacggtccc	480
tcttgaattt	cacaaacggg	ccttctgaag	attcgtaccg	tcacggccgg	tgggaagata	540
gtcccgtacg	ccgcattcgt	gtggagaaac	aacccttcaa	tatgtcaagg	aagtaccggc	600
accgaaaccc	ggactgacca	ttcgtacggc	ttacggtact	tatatgatgt	gcctgatctg	660
cagcaggtag	cctcatggga	agtaggaccg	ttagctcttt	ggaggaaatc	atgcacggga	720
aagagaagat	aactttcctg	aagtactgga	gcgcagagtt	gtagaggcta	ccggttatgt	780
gcttttccgg	aggatgggg	atatgagttc	tctcggaaaa	caaacgaagt	tttgattgat	840
aatgggaaag	cttgatcgac	aatgtggggc	aagttaagaa	atctcccgtc	tgcaatagca	900
gtcgttcccc	ttcag					915

(2) INFORMATION FOR SEQ ID NO:174

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 708 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...708

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:174

agcttgctcc	ctatatcatt	ggtaacatag	aagaagatgg	ctacctgcac	gtgatttgga	60
ggagattctg	gacgatctcg	ctttccgtgc	cggatccggg	cggacaaaaa	ggaagtagaa	120
gaagtgatag	gattggtaca	aagtctcatc	cccccggtat	ctgtgccaga	gacctcaaag	180

agtgtttgct	gctccattgg	atcgattgcc	ggatacgaca	gctcggcaga	cagccctcca	240
tattctacga	accattatga	cgactttgtc	tccaaacggg	tcgagcagtt	gcagaaggaa	300
ccatttcctt	tccgattcgg	aatgaagga	ggccttcgaa	ctgtcatgca	gctcaatccc	360
aaacccgcta	acggatgggg	agatgaagcc	gagcagccat	gaacagggtg	catcccgatt	420
tcacgtcgca	gcgcatgggg	gcgatctggg	cgtgtcgctt	actcgtgggc	gtgatattca	480
gcccttgccg	tcagtcgggt	ctatcaggag	atgatgcang	attatcaaag	ctctgctaaa	540
accgntcacg	cgaacgcaaa	caaacacttc	ttttcgtaaa	gcagaaaggg	atcaagctca	600
atggtcatcg	aagcccttcg	tcagcgacgg	gaaacgcaca	gcggacgatg	gaggccatag	660
tacgggtaca	ggatgcttac	tttcgagtgg	agaacttgcg	atctgaag		708

(2) INFORMATION FOR SEQ ID NO:175

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 588 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...588

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:175

gctgtcgatg	agttttcttga	gtttgagctc	gatttgatcg	cagagggcag	caattcggta	60
cgatcggcga	actccacatc	ttcttcgggg	aagtccaatc	caactccatc	agccccgtaa	120
ggcgaagcaa	ttcctcacgc	agagcatcag	ttcctcgcta	tatccaccac	gcagttgctt	180
catcgccatc	tgatgcgtgc	cttgctctcg	ctggcgatga	tatccgccac	cggtcggcca	240
ctactaggtc	catacgccc	ttgaggtagg	cacggcgagt	aaattcgccc	cgnttgccag	300
accgaacagg	cctgatttga	tcaatgcctt	cgagaatacc	gtcacccgtat	attatatgga	360
gccatggcag	gcaatctcga	ctggatgctc	ggagtgaagg	agtgcnggcc	atggaaacac	420
gttaggataa	cttcgtcaat	ggttcgctcc	gctccatgaa	tttcgccata	gaaggcggtg	480
cgaggcttgg	ttccgctgaa	gtcaatcggc	ttggccacga	tatagaaaaa	gtgggctaag	540
agcggaaagc	attccggacc	ggacacacga	attcacccga	ataccggc		588

(2) INFORMATION FOR SEQ ID NO:176

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 815 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...815

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:176

```

gcgtaccgtt ctgtaccatg acagtggaga cataacctct tcccttgtca gagaagactc      60
gatgatcgaa ccgatggcac ggcggtagg attggcttca gctctaagat atccgcttcg      120
agcagaacct tctccagcaa ttcggtgtgt tgatgccttt cttggccgag atctcctgac      180
tttgatattt gccaccagc cctcaacgag gtagtctcatg tttgcaagct gctctttgat      240
cctttgggat tggcagccgg tttgtctatc ttattgatgg cgaataccat cggccacctg      300
ccgctgaagc atgattgatg gcttcgactg tctgtggcat cactcgtcgt cagcagcaac      360
gataatgatg gcaatatccg taatcttcgc acacgggcac gcatagccgt aaaggcttcg      420
tgtcccgccg tatccaaaaa ttaatacggc ggccactggg aagtttcaga ccataggctc      480
cgatgtgctg gtgatacccc ctgcttcccc ttcgatcaca ttcgtattcc taatgcggtc      540
agtgcgaag tcttaccgtg gtctacgtgt cccatgaccg taacgatcga ggacgcgcaa      600
cgaggtcttc ctcattatcc tcttcngggg caatggntct ancaaaccg cgctgacaaa      660
ctccgtcttg aagccaaatt cttcagtagc atattgatcg tttcggcacn nagacgctga      720
ttgataccga ccatctaccg atactcatgc aagtggcgat nacttcgttc acggggacgt      780
ccatatattg gacangtcac ttacngtaac naatt                                     815

```

(2) INFORMATION FOR SEQ ID NO:177

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 473 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...473

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:177

```

gtacaacggc tcgttcgaag ccaattatct ggtatcgaag tccggcgaca atacgtgccc      60
ggagactaca gcaagaccac cagtctgaat atccgatgac acacagtcag gatccgaagg      120
ccaatccttt gcaaacgttg tcggccatgt caattttgcc accggnagct atttccagaa      180
ttcgctgaat accaccatga tgtcaatgcc cgtactgcta cgacacgaag ttcggccgtg      240
agctatcgcg caagtttccg ggtactcctt tttcgattac gggtagcatg gatacagcca      300
gaacatgcgc gatacgacgg tgagccttac cttgccgaat cttcgattaa tatgtccacg      360
cgttatcctt tcaagcggaa gaccogtgta ggccggagcg atggtacgag aagttgagtg      420
tgggctattc cggtcagctt ccaatagtat cttgacaaan gagaaagatt tgc          473

```

(2) INFORMATION FOR SEQ ID NO:178

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 516 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...516

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:178

```

cgggctgtaa ctacaatott tctcattggt ctttacttat tgtttttaag ttttgagtca    60
cgggtatcacc ataatagcaa tcagtgtgta gtttggcacc gtccttataa caatcggatt    120
cacttttttg ttgtgagttt aatcacaaac tgtcgagaag tttatcggca tgcttcgagt    180
atgcggcgag ccatagcccc tcgacatcca atgcttcgcc atagctgacc cctcgttcga    240
tgaatgacgc tctatttcct ttatcacatc cgatcctatg tgcatttctt ccagcggggtc    300
ttcagtcgga gttcgcggaa gaattcctcc gtccgagcaa tagtgcattc atacgctcct    360
cctctgttcc ctcttttata tcccagattc gtccgcatat tggagcatct tctcccgctt    420
gtgatcgtgt cccaagggtg gagagtaccc ggtagcacta tggccagcgt gtgtccgtgt    480
gtgagtcggg cagtgccgta tctcatgacc gatcat                                516

```

(2) INFORMATION FOR SEQ ID NO:179

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 656 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...656

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:179

```

cggcaactcc atccttatca aggtaaacca gattggtacg ctcacagagc cctgaatgcc    60
atcgagatgg cacaccgtca cggctttacc agcgttactc gcaccgctcc ggagagacag    120
aagacaccac tatgcgagac attgctgagc aaccaactcg ggacagatca agacggggtc    180
gtcagtcgtg accgacgtat ggctaagtac aaccaactgc tccgcatcga agaggagtta    240
ggccctgcgc tgtatacggc tacaagaaag tgtaagcgac aaagtacaca cagggtacatc    300
ttctgcccga atacggaaaa ggggaaaaga tagtaccact gccaaaaaaa gaatgcccccc    360
aaagttggaa acacaacttt gggggcattt atttgccgac ttatttagaa gcgaacaccg    420
agaccacaaa agaagtcatt atacgcaaag aagtcttatt cggagcatcc ttcaacatat    480
taagcaatcc tgcctcatat caatttgtac gtaataacgg tcgtagctca aggcagcagc    540
aagcccaagc ccaagtcgaa acggttatta ttcgttatca ccaaggctc tacagaagcc    600
gtaacgcctg caactttagt cttaatcggt ccggcgaacc atattgccga aatagg        656

```

(2) INFORMATION FOR SEQ ID NO:180

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 439 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...439

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:180

```

cgccgactga acggaattt gcagaaaggg aatgcttgga atattcattg attatcaatg      60
tgattgttac tggttcgatt ttatttataa cgcaagttgt ctogatattg tctgatagtc      120
tcctccagtc ccaaataagag agcatcgcaa tcagtgcgtg gccgatggaa acttcgtcca      180
aatagggcag tegttcgcaa agtaacggag gttgtccaga ttcaaatacgt gtccggcatt      240
gatacgagac cgagcgaatg agcgtgtacc gaagccttga catagggtg tacgcagcag      300
ccatgtcctt atgataggcg gctgcatacg gtcgggtgta aaactctatc cggctctgtac      360
ctgtcttggc agcccacgag atattgtcca agcggtatcc gatgaaattt ggaagtcctg      420
ataccccaang gcatggaac                                     439

```

(2) INFORMATION FOR SEQ ID NO:181

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 640 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...640

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:181

```

gactgccaaag ggtccgctca gtaccgtgat acccataata tagaatcggc tcgagcagag      60
gtggtaggag gtctgcataa tcgtattgag catattggca gacccatgac atgccctaca      120
tagccgaata tggcgaagaa gagaatgtga agccgagggc ttcgaagaga tgacgcctga      180
acgtcagttt cttgtgtgag atcttgtctc catttataat gatgtatgcg gtggtttttg      240

```

gtgggaaaaag	acaaggccc	gcgagcgtt	cgttcggtgc	tccgctcgg	tcttgccgtg	300
aggattatga	gttgggtgtag	acgaccctgc	ctcctttgac	ggttgctcca	cgaggttcat	360
accgaagtga	taggagagga	atttgtacga	tggtattgga	gtacgacgag	gtcgcccttc	420
ttgcccggt	cgatgctgcc	gtcgtatcgg	ctcttcctat	ggctgcagcc	ccgttgatcg	480
tgagggctgt	atggcttctt	cgacgggtcat	gcccattgtag	aggggtggcaa	gggcaaacag	540
agggggacgg	aagccgagaa	gcaactgccc	ggattgaggt	cgctccccgt	gcaacggcac	600
agccggcgctc	gatcatctta	cgggccggag	cgtagtcgca			640

(2) INFORMATION FOR SEQ ID NO:182

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 524 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...524

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:182

ggagaaagct	cgcagctccc	gaatcgattt	ggtggcagag	gtgaagaagc	ttacctcagt	60
gtattgttgg	ccgaggactc	ttatggcgta	ttcaagcgag	ctatgacaat	gctctggcca	120
attataagaa	catatccgac	aagttcgctg	tggacttggtg	gccgagtatg	ataagattcg	180
agccaatgta	caggtagcaa	catcgagcct	aacctcttgc	aagcgcagaa	ctccgtagcc	240
cttgccctctg	gcagctcaag	gtcctgatga	gcatgggaagt	ggaaactccg	atcaactctc	300
cggttcattg	tccgactata	aagaacaagt	ctataccggc	tatttgccgc	cgatacgctt	360
atttccaaca	actcctccct	gcgtcagctc	gaatacagcg	togtctggct	gtcagtgacg	420
acaagctgaa	caagtacagc	tcctgcctac	actcaatctg	ggagggcagt	acacctattc	480
gctcaacagc	acgacatcaa	atctggggcg	gggacacgct	gacg		524

(2) INFORMATION FOR SEQ ID NO:183

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 534 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature

(B) LOCATION 1...534

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:183

ggcaaaatcc	tgattcgaag	cgatctaagg	aaaagaaaga	accctcccac	atggcaaaaa	60
gcatccaggc	ataggtgcct	aatagataga	aaggcttggc	agggtcagaa	catcctgtat	120
ggtttgagc	gtatgggtag	agggatactt	ggcgaaatct	ggtacatagg	catccccccg	180
aagagactgt	tggtccatag	gagtgttctc	ctgtctgtgc	ctcccaatcg	cgtacgtcct	240
gcgcctaccg	ctggetcccc	ctacgtcgcc	ctggaacagt	acacgcccgt	cgaagaggcg	300
ggatagaaat	aggccaaagc	gagggctatg	aaaaggagta	cgacgcagca	taaggtagga	360
ttttgcgcca	atcaggcttt	gtcttatcgg	tgtggttacg	gttccggcag	cagctgtcgc	420
tttcgtttct	ttcatgatgt	cttgttttcg	tacaagtaaa	aaccatgtga	tgctcgccct	480
cgaccactgc	tctctgacgt	gagcagagag	tatctcgaca	tgtatgatgc	aaga	534

(2) INFORMATION FOR SEQ ID NO:184

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 457 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...457

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:184

atagaaaatt	gctctgccac	togtgtggaa	gtctatagcc	agagccaaac	ggtgctttca	60
tatcccaggc	atacaatctg	tgcgaagtaa	agaattgctc	gtaacggaca	gcaagataat	120
cgcagacggt	gggttgatcg	gtggattgtc	ggcataaaact	ttgctttctt	ccccggaacc	180
gagtctactt	tctccactgc	tatgctctca	atgtggaagt	cgtatcgctt	gacagtgggtg	240
atcaaccggt	ctcggagggt	ttgtcgggtc	ggtatcagcc	aacttcattg	ccaacactgc	300
tacgtgtcag	ccaaagtaac	gggaggaaaa	aatccccggtg	ctttgtcggg	atgacggcag	360
atgaatccat	gaactgcaaa	tacgacgggt	gctctacaac	aacgaacaaa	ncccgggtat	420
gggtcggcat	aggaaacggg	ctcgaaatac	ctgccat			457

(2) INFORMATION FOR SEQ ID NO:185

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 472 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...472

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:185

```

acgctcgcta tgcagatcaa ccccatgctc tgcgggttctt cgttcaagac aagggcgtag      60
agacactgct cgatgccgta tgtaagttcc tgcccagccg gcagatactc ccacagtggg      120
aggtagcgat ccttctgact cgagtaagtg atagagcgca agacctctcc caacgagcct      180
ctctgtgctt tggcggttaag attgctaccg acccttacgt agggcgctctt tgcttcttcc      240
gcgtaattcg ggcgaattgc ctgccgggtc atacgtttac aatgctcgtt ctgaaagaag      300
gagcgatatc ctcgctctct ccagatgcac tctaacaagc agaccccaaa naagtgatcg      360
gttgcggtga catcngtgcc ggtgtagctt cangatattc gtacggggcg tacgctttgc      420
gatgagagtc atcctatcgt ttcgaatcta tggacttccc cgatccggtg at              472

```

(2) INFORMATION FOR SEQ ID NO:186

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 604 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...604

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:186

```

gcgcccagata gtcttgcctc cgctttccac ccatatcgga cgattcggac acaagcggag      60
agagcatcgt gcaagagatt catgaaatgt tcgggtggtg ctgctgctct tgccccaagg      120
caccgaaggc agaccctttg tgggtgggcaa tccttcagga tcgatcacct gttcccccat      180
ttgggtgagt tcgttcggat gggcgttttt cctgatcccg tataaccgcc taagacgatg      240
aaacgcacgg gtaaagcttc agaatatcgg ggaaatgccg gcggtatgct ttgttccgcc      300
acggagacga cggatgcgaa gtccctgctac ggatagcagc caacgacact ctcgcttcgc      360
atacctcctc tccagcagta gaggatgatg tcctgccggc agcaaggag cgagcttctc      420
gcaccatctc ggccatacgc gcccaacgaa ctccaatcct cgctctacgg ccgcctggcg      480
actatgtctg catagagcgt acctacctcg gctcgttccg catccgaaaa caggggggaa      540
tctctgcgcc cgggaatatg tccgcggcgg tattctttcg agagcgactc caaacgaga      600
gagt                                              604

```

(2) INFORMATION FOR SEQ ID NO:187

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 620 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...620
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:187

```

gccaataatt ataaaattca aacagcctaa acattcttaa tgcgatgaca ctagtaacaa      60
gcaataacaag agctnnggaa aaaattacag cgtaatcaaa tacatctcat tctgaaaaaa      120
agagaataaat acggctgacc aaaataagaa aggctcaagt ggtaatacgg agaaaaccta      180
tttgcacgaa ttaagcgtag attgatagat aaaacagcaa caacaaaaca agaccaataa      240
accagctca gcaagagcgt tcacaaactg attgtgtgag aaaactcgca tgccgtcttc      300
tgaaaattac gctcaacaac ttgagtatac ccctgtccca acaaaattca taaatattac      360
cctcactcca tccttctatc ccattcacc cccaaaagaagta cgtccagatc cttttaaatc      420
cattccttct gcagaagcat tgtatgcaca ttgcgccag ttatccttgc ctgaaactgc      480
tcgtggtatt tagaaataaa caggagcaca ccaactaagc ctatcaaaaa tgaaaattac      540
caagtgatga tagtaattta cgaggagcat tagataccag agcacagaca taaccagctg      600
tacgacatag cctgaaacag                                     620

```

(2) INFORMATION FOR SEQ ID NO:188

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 630 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...630
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:188

```

gtccgttttg acaggatattt ggggagaaga aaaccccaac gaaacgggat gtttaaccat      60
tctattggat catgcctatc gggaaatcta cccaagatat agtacacatt gtgagtttat      120
agagtttccg ggtaaaattg ctctccgtac gattcccttt gcgggaagat ggcggaaggc      180
aaaagtgtat gtcgcatcaa aaatgacatc ctacaggaaa gaagaaataa gaggttgatt      240
tataggcatt atatcttgag gaaagaaagc tcaaaatgct cctgaaacaa actaatagtt      300
cgggtcaaacc aaactatata ctttggtgaa actaaactat atatttggtt gaactaaact      360
atatactttg gtcgaaccaa actatatact ttataaagcc aaactatata ctttggtttg      420
gccatggttt tcagcctctg ttcaatgtcc aaaagggagt tggggaaacg atacaatttc      480
cttctaagtg ctctaaaaca atcacttctg tctttcgtaa ttatgctgat agggattatg      540
gctttcggct tttcttttgg aagattggcc gagataggga cgggaggga agcatccgat      600

```


ggggacaaaa gagaaaggtg caactgcatc

(2) INFORMATION FOR SEQ ID NO:189

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 539 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...539

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:189

ggtccgctga cattcggcta ttctaccacc tatatatatg attttgcacg gatagtaagc	60
gtgctctgat cggtagctc tccacggact ggacgcgcgt cctttccgct ttgccactat	120
catggagtac aatatggaga cgggcaagcg gatacgctta tcaactcgca tccttccatc	180
gacgcaatcc agtataaccc gacggcaaac atctgatcgt aatgggttcg gcagatgctt	240
tcggcatata ggactgaacc tgaaatcggg agtcactccc aattcttacg acaacaattc	300
ttcctgttcg atctctccac acggaaagca acagccttga ccagaatttc aaccccagtg	360
tatcggcagg gagattcgac agaaaaaaca acactattac ttcagggctg aaaacggatc	420
gcgcaagcag ctctatcggg tggatctgaa aacccttgag atcagtcaga ttcagaccgg	480
agagggatgg agtacaatgg ttcgggtgtgg cagctgataa tgggtgctgtc tggtagacg	539

(2) INFORMATION FOR SEQ ID NO:190

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 680 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...680

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:190

gcataatgat gagcagcaac gagaggctcg ctggccgaac gatagggttcg atcttcggat	60
gaatctgaaa gaggacctcg caaatcctct tcaaagcgat tcaggtgatc cgcaacgatg	120

aataataaag	aatagaaaat	caaatacata	gataaatgaa	gaagacaatc	ttccaacaac	180
tattttctgtc	tgtttggccc	ttacagtggc	cttgccctgt	tcggctcagt	ctcctgaaac	240
gagtgttaagg	agtttactct	tgagcaactg	atgcccgagg	gaaaagagtt	ttatactttt	300
accccgaaata	cgtggtcggg	ttgcaatgga	tgggagacaa	ttagtcttta	tcgaggggtga	360
tgatttagtt	tttaataagg	cgaatggcaa	atggctcaga	cgaccagatt	ttctgctgcc	420
gatctcaatg	cactcatgcc	gagggatgca	aatttcagac	gactgatgct	ttcccttcat	480
tcgcacact	gatgccggac	ggggactggg	cgttctatct	acccaaggag	gattagtcga	540
ttcgatatgc	ttgctcgaaa	ggtgacttat	cttttcgata	ccaatgagag	acggcttctt	600
tggattttct	cctgtgggag	accgtgttgc	ctatgtcgaa	accataacct	ttacattgct	660
cgtgaggtaa	attgggagaa					680

(2) INFORMATION FOR SEQ ID NO:191

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1046 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1046

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:191

gcttcgggttt	gctcgggtctg	tgacagagata	agagagccgg	ttcctgtatg	cagaataggc	60
gcaatccgat	attaaccgac	atttcctgcc	ttttgagaga	aaacttctgc	cacgatcatg	120
ttacgttttc	acaaaagtgg	cgatgaaggt	gacaaaatag	catgccgaac	agcattcgaa	180
tgacttttgg	tctaattctg	ccccatcggc	acgggtggc	tgatatttga	gcctcttaca	240
agcaagattt	acagcccgtg	aaaacggatt	cggacgatgc	ccaaaggagt	attcggcgga	300
cccttcatac	tttatactat	aaacccttcc	gactttatac	ttaaaccctc	caccctttat	360
actataaacc	cataccactt	tatactataa	accataccac	tttatactat	aaaccatac	420
cactttatac	tataaagcct	catactttat	agtataaagc	ctgcgagctt	tatagtcgga	480
agtattaaag	gatgattgtc	gtgctacact	tgtgcaagaa	aaaggatcag	aacggatagc	540
tactgcaatg	tgccaagcga	aattggaaga	aaggtttggg	cgtgtgatgc	ccatttgtaa	600
cgccctgtct	gctgaggatc	gtaggctttc	agtccggatc	cagccgcaca	aggaaataat	660
cgaagtogag	acgaagcccc	agaccgaggc	caaagctatt	tccttgtaga	agcgatcgaa	720
acgaaagaga	cgtctctctg	attctcatac	tcctttatcg	tcagacatt	gccggcatcg	780
acaaagctgc	tgcgcgaaac	ttccagaaca	gctttgtcct	gtattcgaca	ttcgatccag	840
acgaatatca	cccatctgat	cgaagaaggt	cttgtccgga	gtatcttcat	actccccggg	900
ccgagggtag	ggacactcca	gccgcgaacg	cgttcgatcc	tccggcaaag	taacgtaact	960
aaagggatata	tggcgagcat	gccataaggg	aaagccagtc	cgaaaccag	attgcagtgc	1020
caaagtattg	ccttttcgag	agaacg				1046

(2) INFORMATION FOR SEQ ID NO:192

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 577 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...577
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:192

```

gggcctcaac aatcgaataa aacggcattt gagaatgata ttttctcttt tcttcctgtc 60
cggagcaaga gttgcataca aggactaaag ataattgcgc atacagagtc catcgggcag 120
attggagccg gaaatcaaga tcgttcaatg cctgcgaagc agatcgagag aattacggtg 180
ttctatacgg atggcactat caagagtttc gctcaaacaa agagtaagcc tctctttttt 240
cgtaatttgc actcgaatac tgcaactcga tttctcgatg aaatacaacc ataactgcgt 300
gtcgcgacca atacgaagct aaacgacagc tatttccttc ttaacttgta ccggagcata 360
atgaagtacg attatctctg ccggaaataa agccggacag tttgttcagg tactgactgg 420
atgtccaagg ggcttttttg ctcggcctat ctctgtttgt gatgtcgatt acgaacggca 480
ggaactattc ttctggttca aaaagtaggc aagggtacac gtgctatagc tacattacag 540
catccgattc attggtatct ctatatccgc ttggaca 577

```

(2) INFORMATION FOR SEQ ID NO:193

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 515 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...515
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:193

```

tccggcttct tcgaactgct tggcaaagtc caccacagaa tcggagcgga gcagttgatg 60
ctggctatta cggggatagc cacctcgcgc ttcacttccg gaggaagtcg aggtgtttgg 120
agatctcggt gctctgtaca taggcattgat atagtctgcc gcctcaggat aatccatcgg 180
ggacatcatt tgggactttc tgccctcgatc tgctcttcga acagtgattt cagtacgatg 240
gcagcacacc cgctgcttcg agatctttga tggttttgag gttgcggggtc agtccgaact 300
tgctgcaaca ataggatttt tcaggcgcaa gccggcgaa tcattggaaa atcgatcata 360
tctgtttatt atgaattacg aaaaagaccc tgaagccttc cccgatcact ctcggccatc 420
tctgtttaag acagacgaaa aacgccctcg acaacaaggc ttcccagtcg ctccggcaca 480
tatatgcgag tgcgggctac acagaaggtc ttttc 515

```

(2) INFORMATION FOR SEQ ID NO:194

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 962 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...962

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:194

```

gggccatgag tttgtccgta aaagaggcga agtagtcac cggcacagat agtgtcgaat      60
actgtcctct ttcggacgga tattcacatc ggggtcgact gtttcatgtg agctttgtta      120
gttacgatta tagaggcttg ttcttaggca agtttaatac tcgggcgaca aaaaacgctc      180
caacttcttc acagcagggtg ggaccaatgc cttgagagca ccttccgagg taccggtgat      240
ttcggcattt tttcgtaagg catctcatcg tagtacggaa ggttgaacac caacgctgtt      300
tatcaggcaa ttccagtata gcctttttgga aggtaatctc ggctcatctc catcgaaata      360
aacatcccc gtgagggttg cgagcagata gggttttcgt ccgatgatcg tatactcata      420
tcgtcttcga tctttttctt ctcaggaaat tgagtgatcc gtacatggct atccgataga      480
gccagggtga agtttggcct cccacgaaa accgtccaat gcactccatg ccttcataag      540
gtattttgga gcaagtcgtc cgtatcgtca tgactgagca ccattcgggg atttgccagt      600
agagtttacg gttgtacagg cgtactacct tttcaaagcc atacgccgcc ttgccggatc      660
tctcagctct tccagcaact cttcttcgaa atcaatagct tatcagccat aatgatgcgg      720
taaagatagc aaaagggtgt ttatctatgt caataaagtc gaagattcag ctctgatcct      780
gtaggagaga ccgaaacatg agagagttat gctcctgtgc tttccattct atgccgactc      840
tatcctttcg gctcatgcgg caatccaaat tcaaatacct tgagttgcgc tactcagaca      900
aggtattgca aatgcctctc ggctattacc caaatacgtg cgaaaaaagt tttcaacaac      962
ta

```

(2) INFORMATION FOR SEQ ID NO:195

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 599 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...599

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:195

```

ggcgaagagc atgttcgggc gtacgtccca gtcctgagct ttgccgtccg aacgtaatcg      60
aagagatagt tgtagcaatt cagaaacgta tcggggaaga tctttcgatc cggtgatga      120
tttcgccgat ctccggtttt tcccatgag ttctcgttcg aagcagaggg cattgtacca      180
gagagcattc aattcgcgag atagccctca cgggggatga cggctttgcc attcagtttg      240
gcatcatcca acttaacggg aagcctgtgc ctaagacgta gagaagccca ttttacgaat      300
ttgtgccgtc ggggtgctgg cggacagata ataagatacc actcgtgac gaaggagccg      360
aatctcttgg ctgcttccag accgttgctg cggcatactg ctggatggcc caaatagccc      420
aaatcccaac gtccgggttc tcagcccgtg tatggtgtcg tcattctcat gcagtcgcat      480
gtagcgttcc tcgccggaat gacggtattg acgatgccgt tcgaatcgct tccggtgctc      540
tacacaccag agtacagccc ggtaagtgcc acgaacagat cgcgagctga acgtcgaac      599

```

(2) INFORMATION FOR SEQ ID NO:196

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 561 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...561

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:196

```

gtgccccata cccgcagcca aaacaaaaag tgtgggtttc atcggtttca aaaactcttt      60
tttatatgta atgctgcaaa gttacgatta tccacaaagg atcagccgaa actgtacagg      120
ttttcatatc tctgcacagt ttccgctcta tatcttttca ttaggggata ctccgaaatg      180
ctattcctta ttgcttttga aaaaaggaaa cagctgctat cagcagcaac gtgaacgggc      240
cataatttga gcttgtaag gatttgtttg tgtttgaggc tgcategctc ttctctgcat      300
cgaaaacgat ttgcagcttt ttgtgatcaa gaatacggta gattctgtca taagcatatt      360
cgccaaaagg gttaaggatg aaaggagtca tttccttttt tccattcttt tagagaacgc      420
ttacgactgc tttattattg ttggaatata gactaagccg acatgcccac cattttgcgc      480
agattgatca cgcatatcgc attcggccga gtgccgtatt gatgcttact ccggtagcac      540
tgcaatctct cggagctcat g

```

(2) INFORMATION FOR SEQ ID NO:197

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 655 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...655

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:197

cagtattgcc	caatggggtg	atgagcggtta	cccccttcaaa	tgtagcggt	cgacagagaa	60
tcgcttcgac	aaagattcgc	gttggtggag	tgccgctttt	cggccgacaa	tagttactgc	120
atcggtttca	gccatgtgaa	tctgagttag	taggctgtcc	cgaactgagt	ggaatactgc	180
tgatggccac	ttccggacat	tcgatacctga	ttactgctgc	tatggctctt	cgctcagtcg	240
agaattgcgc	gcccgggaga	atacaaggct	gtattggaca	aatacgggtat	agatcagccg	300
tgaccgtaac	cgagcggact	gctttgaccg	aatttgcttt	tccgaaggag	aaggccatat	360
cctgctgaac	ctgggacagg	ccctaagcaa	tgatcgggag	cctctgttcg	attcttaaac	420
gactccacag	tcgtcggcag	cggctgatgg	ggacgttctg	ctacaatccg	caagcagttt	480
ttcgctcagta	ttcgtaactc	aggtgagtcg	gcgaccgatc	tctgccggct	attggaagag	540
cagcctccta	tgacagtgga	agcccaatgg	gattcgactg	cagggaaaat	agcagtacga	600
cggctacagc	gtgagatgag	cgtgatgaca	tcgtgtcgat	ctcgtcaact	ggatc	655

(2) INFORMATION FOR SEQ ID NO:198

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 694 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...694

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:198

tgtagagagc	atgatctgcc	ttatacggaa	accaaacatt	tcgacgaagg	gtgatcaaca	60
actgcgacat	tctctacatg	acacgagtac	aacgtgaggg	tttacggatc	tggaggaata	120
tgaacgggtc	aaagatgtct	atgtgctacc	aacgctatgc	tgtagcagag	ccgtccgaat	180
ctgcgcgtac	tgcatcgcta	cctcgtgtgg	gggagattgc	ctatgatgtg	gatgacaatc	240
ccaaacctac	tttatccggc	aagcactgaa	cgggctttat	acgaggcagt	ccatatttgt	300
gaagtgtctg	gcatagacgt	tgcaaaactaa	gcagatattg	taagaaaaag	gaagaaatgc	360
tcgtcgccgc	gattagaaac	ggcatcgtga	taaccatatc	cccccgacga	aactgttcaa	420
ggtggctact	ctcctgcaac	tgatgatttg	gacaagcgga	tcaccatcgg	caacaatttg	480
cgcagtcgga	ccatggttcg	aaaggagtta	tcaagataga	ggacaagact	ttcgaagaga	540
ggaattgaac	cgcacgcgtc	ttattgcccc	gaatgtgcgc	ctgaacatat	tcgggactat	600
gaagttgtag	aaaaacgtca	ggtggaagta	ccacacggat	tgtgggtctc	gtccggtgtc	660
cgaatccgaa	gtgtattacg	aacaacaacc	gatg			694

(2) INFORMATION FOR SEQ ID NO:199

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 434 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...434

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:199

```

ggggctgatg gaatatgttt ttcccgaaact cttagccctc aaaggagcaa aacgcgtgat      60
ggcatcgggc ataaggacaa tctcactcat acttataagt agtggacaac ttggctcggc      120
acagcgatag tctttggctc aggtgggagc attgctacac gacataggca aaccacgcac      180
taaaaagttt gttggcgaca gtggacattt cataatcaca actttgtcgg agccaagatg      240
ctacctctct cttcaaacga ctccgacttc cgctggatgc caaactcaaa tacgacaaaa      300
actcgtagat ctgcacatgc gtccggcagc tctggtggac gaagagttac ggattctgcc      360
gttcgccgtc tgcctcttga aagccggtga tgtatagatg atctgatgat gctatgcgaa      420
gctgacatta caag                                     434

```

(2) INFORMATION FOR SEQ ID NO:200

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 900 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...900

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:200

```

attgaggcag ggtagttctt tccgccatct ggactgtctg gccctacagg aacgcgattc      60
gtattccgtc atcctgaaac gggagatacg caggaataaa gttgcctttg cccaaactct      120
ttcgccgcct gatacatctc gaagaagcac tgcagcagac caaacaatat caaagacaaa      180
aaaacgttcc aaatagtagc tgactaattt taataatcca acatataata atgacaaaaca      240
agaacacaga aacagcaaat ggacggtagc tttagcccta ctgtttctct ctatttgccc      300
atcggggcat ctgctcagat tatcaaggat gtagtcgttt ggaaacctct cttcaggata      360
gcgacacgcc tgagaaaaaca ttggtgttta cgccacgata aaacccggat ggcaccttta      420

```

tgacccaaat	ctgcccagag	aggccctaca	tccacagaat	tcctgttcga	taaaatgacg	480
ggagccaaac	tgtecgtaag	gctattcctg	acaaagctcc	tgtcaaccga	tacgacaaga	540
gttcgaaatg	gatctgagat	ggtacgagaa	gactgtctct	ttccgtcaaa	aattcagggtg	600
acggaccctg	ccaaattctc	tatcaaaggt	ggtgttcctt	catggcttgt	aatgatgaaa	660
actgtctgcc	acccgaaacg	agcgactctc	tttcgatget	tcgatgatca	agagcaaggc	720
tgcagctcct	gatacgaagc	tgaagctgct	gaagcggttg	ctgccgagac	cgcagcggat	780
actaatcgca	gaccgatgct	gccgaagctc	tttcgtccaa	ggctgacttg	tggcaccggt	840
tgtagcgag	ttgcgtgcat	acggtgatga	tacgctcaag	cagcagaaga	gtgctccgtg	

900

(2) INFORMATION FOR SEQ ID NO:201

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1120 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1120

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:201

aacaacttgg	atctgcagcg	caacaagatt	cagctctact	gcaatcaggt	tacgtcacccg	60
atgaagtaca	gggtatcgtg	ccggacttcc	tcacctctg	cacgggggtca	tcgatttcgcc	120
ggatattccc	ctcaacgtat	cgcgctctat	ctgcagagcg	atgccaatgt	gaagaagatc	180
tcgtctcata	tcaccagaag	gtggcagacc	gtctggaaga	aattttcaaa	aacgaccgcc	240
ccacatcgag	gagaaatggg	atagtctgaa	gctcttcgtc	gaatacggta	tgctacggat	300
gagaagttct	atgagcgtgc	agccaaattc	ttccttttca	ccgtatggac	ggacacaagt	360
acacgttcga	cgaataccga	acgctcgtcg	aagtgtacag	acggataagg	acggacaggt	420
agtgtatctc	tatgctacgg	aaagcatgga	cagtacagcc	acgtgaaacg	tgcattccgac	480
aaaggctaca	cgtgatgctg	ttggatggtc	aagttggatc	cgcatactgt	gagcctgctg	540
agcaaaaagt	ggagaagaca	cactttgtcc	gtgtcgatag	cgatacgaca	acaatctgat	600
ccgcaaggag	gaaagagccg	aagtgaact	gtccgatcgg	agcgcgccac	tctcgtgaag	660
ctgttcgaag	cacgcctgcc	acgggagaga	agaagcactt	caatgtagct	ttcgaatcgc	720
tcggagccga	aggtgagcca	tccttatcac	acaagccgaa	ttcatgcgcc	gtatgcgcga	780
tatgcacagc	tgcagccggg	aatgagcttc	tacggcgaac	tccccgattc	gtaaatctgg	840
tacttaatac	cgatcatccg	ctcatcgaca	gggtactctc	cgtgagaaag	aatcggtaga	900
gccttcgctc	acagagctta	gagcgaaaat	cccagagctga	aagcgggaaga	ggccaagctg	960
ctcgatgagg	aaaaagggaa	aaaccggagg	aatccctgt	tgccacgaag	gaagccaagg	1020
agaacaacgc	gtcgaacagg	ccaaaaccga	aggcagtatc	aacgatcaac	tgacccaaat	1080
gctcaggaca	acgagctgat	aggtcagctc	atcgacttgg			1120

(2) INFORMATION FOR SEQ ID NO:202

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1540 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1540

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:202

accatatatc	gctatgaaat	taatccaagt	tcaaattcat	tcttcggag	gaactgattg	60
cattagagcc	gaccaagttc	cgcgacgaat	cgcgaatgtg	gtcgtacatc	gtcgtacagg	120
agaaatcgaa	catcgcgttt	tcaaggaatt	ctggagtatt	tcgacaaggg	tgataccttc	180
gtcttcaaca	ataccctgtt	tttctgccc	gtctctatgg	taataaagag	aaaaccggtg	240
ctcagtcgaa	gttttctctc	tgcgtgaact	gaatgaacga	ctgaagctgt	gggagtcctc	300
gtggatccgg	cccgcaaaat	acgcataggc	aataagctct	attcggcaat	gatgaagagc	360
tgggtggcaga	ggtgatagac	aatactacct	ccgagggcgt	acgctgcgct	tcctgtacga	420
tggctctcat	gacgaattca	agaactgctt	ttccaattgg	gacagactcc	tctgccgaag	480
tacatcgatc	ggacgtgaac	aaagaggatc	cggagaggta	tcaaagcata	tttgccaaat	540
ggaaggcgcc	gtggtggcac	ctgctgccag	tcttcatttc	agccgcgact	gatgaaacga	600
ctggagatca	aggactgcc	tttctcttac	ataacggaca	ccacgctttg	ggagcttatc	660
gogacatcga	tgtagaagat	ctgacaagca	caaaatggat	agcgaggaga	tgtatatcac	720
ggaggagtcg	tgcataacat	caaccgttca	tgggacgaag	aaaagaagat	ctgcgccgta	780
ggaattcgat	tcttcgtgct	ttggaaacag	ctgtgagcac	agacggtcac	ctcagccgtt	840
cgaaggttgg	accaatcgct	tcctctttcc	tccatacgag	ttcatctgcc	ttctgctttg	900
gttacgaact	tccatatgcc	gctctctacc	cactgatgat	gacggccgct	ttcggaggac	960
atgaactgat	tatgagtgc	acgacctcgc	tgtaaaagaa	aagtatcggt	tcgggtgctta	1020
tgggtgatgca	tgctcatcat	cgattgagta	tggccatagt	gtatctttct	ttgggcaaca	1080
acttaggcga	tcgacacagt	ttggtgtntg	cagcattgga	gatgctaaaa	cgagggtggg	1140
cagactgctc	accctttctc	ggttctatga	aaccgaccgt	ggggattcga	atcgccccat	1200
cctttctctca	atgcggtggt	ggcttgcgat	cggaaactcaa	accacaggac	attctgcaca	1260
tcacacaagc	catcaaaggg	aattgggtcg	tacacaaaaa	agcaatggag	gggtctatca	1320
cgacgtccga	tagatataga	cattctattg	cattccgtat	acccgaaagt	acgtcacctg	1380
agctggaact	gccccaccca	caaagtgtgc	aacgggattt	ttgcgtatgc	cgctatcgga	1440
cgtagctcct	tggctgcac	cggaggctcc	actccgaacc	tctgactaat	gaaagaaatg	1500
aatgtaaacg	acttcgagaa	atggctccag	tcggttcgta			1540

(2) INFORMATION FOR SEQ ID NO:203

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 656 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...656

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:203

cgcaattgat	cgggatggct	attctgattc	ttctcgttct	ctatgccaaag	gcaatgactt	60
gctcagggct	tttcgctgac	agaccgctat	gattcggagg	agacttaccc	ccacaacttc	120
gaggagaaaag	tgggtttcga	tgagattgtc	gccttctcat	cggccattgc	catagtccga	180
tgggcagcga	tcgggtatac	agatgcatgc	tcttgcaagg	cataacgaag	tcagccgctt	240
gcttgcgaga	cgggaagaaat	gcanattatc	ctgagagaag	acgacttggt	tcccatctcc	300
gtctggccga	tgtgcgagaa	gcactaaacc	gtatccgacc	tgcggtacct	atctggaaga	360
gcgagagttg	caggatgtgg	ctactgctct	gagacaatcg	aggctctcat	ccgtttcttc	420
catgtggggg	aagaagagga	ggtaaggata	caccgtaccc	ccacctccaa	actcttttgt	480
ccgagggtcat	gcctttccgg	atctggagaa	gcgtatcagc	agcttgttcg	atcggttcgg	540
aaaatgaaaag	acaatgcctc	gcccgaaactg	atgaatatcc	gtcgcgaatc	tcttccatag	600
agaaaaatat	ctcgcgcact	ctccaaggca	tccttcggtg	gctcagtcgc	aaagct	656

(2) INFORMATION FOR SEQ ID NO:204

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 919 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...919

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:204

cagcaaagca	aatgctagat	aaggataagc	ctcggactta	gcaaagcaac	cagtaaaata	60
ctcactgatt	ttgatcgctc	ctcctgcgga	tcgatagctt	cagaaagccc	gaaacacgaa	120
ggtcagacct	aatatgattc	gagaaagtca	gcaaggaaac	gtttcatccg	ttcaactgta	180
tcaatgcgaa	gatggctagt	tgatcatatc	catgtagttg	gcattccacc	cttcggatat	240
atatgatcac	ctccgagatc	ttctatctct	ttagtgcgaa	ataccttagt	cagatcaagt	300
cggcaaagga	tgacacacgc	atctgtctcc	acgcctctcc	atatcatgat	tcttatcaag	360
catcagcgac	atggcttcac	gaatcttgag	gtatacaggc	gcagagcttc	ctctgtctcc	420
atcttaggtg	tgtcagctac	tccagctcca	attggatgag	agctattact	ccataattga	480
cgacacctat	aactcagact	ccactccttc	atccacctta	ctcaaacctt	tcatctgaaa	540
tttcgaatgc	ggttggcctt	gatataaagc	tgatcgggtc	gagacgacga	cgcatcactc	600
gccacgaggc	tccatagtcg	tgcagttttt	tctgaaaacc	tcacgacaaa	tatcaatcac	660
gtgctcgaa	tgtcttactg	tatttgcttg	gctgtagtca	tttctttctt	tgtttcttct	720
ccgttttttc	cacttttcgg	ttttctcttc	ctcggctctc	ttgccaaagg	aatatatatc	780
ggtgtatcga	tgactttctc	ttcgagcaaa	gcttctttca	acacctctgt	taagttggac	840
acatagtggg	acttcaagcc	cttcagatag	atatacgntaa	tcctctatgt	ccttgcgatt	900
ctcttcgcac	aggatattt					919

(2) INFORMATION FOR SEQ ID NO:205

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1055 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1055

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:205

```

cggggggattt tcctcctctt tttgggcttc tgccagcaat gagggattta ggctatgcc 60
aatccacac tgccgtaccc ggtcacactc gctgacgagg ttatcagggt cgttgcggtgc 120
ggatgcttac ccgaccggg atcaaggata cggcatgggt agttatctgg tggcggcatc 180
gcttttttcc ggtaagtcga tgtatcgaaa ctgatctctg ccccatggga agccacttac 240
ttcggcacag agtacgccag cgtccgattc ggctgcgagg ttactatcga tacaggccgg 300
aagcaaatat atcgatggca gcatagggcc ggatgccgtg ctgaaggcaa agaccaatgc 360
acgatcgccg gcgtattcta tgaagtaact gagatacgcc ctacttgaat ggcaagaacc 420
tctatactgc accgtccatc gatctattgc caaagtgata gcaaatgata cggatgggtg 480
gcagccgttc atctcacgtt ccgatccgtt ggcaataaaag tcgtggactt ggccaacaac 540
agtaccgctt ggctctggtc ttttcgtctt catcgcggtg agacgagtta tcggctccgt 600
ggatagcgaa ctgcttggtc atgaagtaac ccttacgtga ctactttacc cgaataaacg 660
ttatgaaccg gcgatatttt cttttgatgc ttgcttttgg agcctctgct tcatcctgtc 720
ggctcaggag tcgaagcttc tgtccggccg tcgctttggg agttttccag cagagtgggt 780
atgctgtggg agcatccaca ccggtacccg taccccaagc catggagcac gtcacgcgtg 840
gtatccgcga ctgaatccga tggtgcaact gagtgcctcg cgcgtttgct tgccggcagt 900
ccgtgggctg tgaacgtggg tatagccgta ggaaaaaagg catggaagct actacacgag 960
tgaaagatat gaaagtagct tcgtgtcgga ctgccttat gcccggaac cctgatgaag 1020
aatatccgga ctattcaccg gcgacaacaa tacgg 1055

```

(2) INFORMATION FOR SEQ ID NO:206

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 522 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...522

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:206

cgtgcggttt	cttttgccca	acgggacaac	tgtcgaaa	cgtcagaaat	gctgcctcg	60
caatttgoga	cacagccatc	caaagaacta	acggatttcc	ttacccctt	ccctttcttt	120
caactgaaca	aatcgatcta	ttcaaataaa	tgacagattc	tttcgacaac	gaacaaccgg	180
atatagagtc	atctgttccg	atctgcttcc	cgaagccggt	aatcgccctgc	cgggttgatca	240
tcctgcatgg	ctacacacca	tctcgggggc	atgtatcgaa	actgggtatct	cgatatgctt	300
cttacgtaat	tctggagcgt	gccgtgcccc	atatagaaga	tggtcaagc	ccgtacaacg	360
ccgtatcctc	tacaccatgc	accattgggt	cgcaatggtc	ggatgaaca	aggtagcgaa	420
ggtgaccggg	acagactatg	gttctacacc	cgcacgggag	atgcttctat	caacgatgct	480
cttcgtacag	tggggcaaaa	agggtatttc	tgatccgaaa	cg		522

(2) INFORMATION FOR SEQ ID NO:207

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 579 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...579

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:207

cccctgccga	ttatcgcggt	gagatagggg	ttattatgat	caatctctca	atactccttt	60
taccatagca	gatggcgaa	ggatttgcca	gcttggttac	ccagacatga	acaggccgaa	120
tgggtgctta	cagacgaatt	ggccgatcgg	aacgaggtgc	aggcggattt	ggtcatacgg	180
gcaaagaata	attttcatct	cccttcaact	accacagatg	cggatccatt	ctatcattct	240
cctgcgtttc	ttttagttat	ttctcctgta	gccggaagta	tatccattac	agacgtacag	300
catctaagtt	cgaccgatat	ttctatgaag	gtgtccggca	gcggaacagg	agaattatgc	360
tgcagctttc	gacatctttc	gctattgcca	tcgttgaatc	ccaacgatgc	ggctctggta	420
tcggagttgg	gaaaactgga	ttttgccatt	gggcgtcagg	aggaaggaac	cccgggtattt	480
ggaacaaagc	tatcggtctc	atccgaccac	caaggaacta	tggcaatata	ttaaggtgcg	540
ggtatgaacg	ccagggacga	gctgacgatg	ctgcaggct			579

(2) INFORMATION FOR SEQ ID NO:208

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 578 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...578

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:208

tcccccatag	aaatctcaaa	caaccgcaaa	gtctttctga	ccaatcaata	ggggttgtaa	60
acatcactga	cgggatggaa	cctccgatta	ttgcgggata	tctgcttctt	atggatcttc	120
cgtccgggtg	tatggtcatg	tctcacacgg	tgggacatca	taggccattg	ctatttggat	180
atctacccaa	ccaattctat	ccgctcagca	cgaaccctgt	tgcaggagac	gatgagggtt	240
ttgtcaacaa	caaggcaggc	aaatagagat	cgatagcaac	agccccatag	tccagtggtc	300
gtatacgatc	ttgaggggaa	aagtgttttt	cgcaaaagaa	tgacgaaaac	gcttataccc	360
tatccttttag	agcaccatg	ctcggtttta	tgccatcatg	atcgaaacac	aaaattcgat	420
tatcaataaa	aaacttaatg	tacacagcta	tgaaacgaat	aattttatta	ctcagtactc	480
tctgcttctt	gtatcaacctt	atgtacaagc	gcagaatgaa	ggttcagatg	cttattatca	540
caaagtgttg	aactaatccg	ttccgacttt	cgaacgga			578

(2) INFORMATION FOR SEQ ID NO:209

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 996 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...996

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:209

ctgccagttt	tcttcaaata	ttcttttttt	atctttttatt	tggtctggat	gtcaccatgc	60
tttatattag	gttctgattt	agccttgctc	tcattagcaa	gtaagaagtc	aagggttagca	120
tctcaacctc	ttgcactcct	aacttctttg	tgcgaggctt	tttaatttat	ctatttcttt	180
cgggttacta	ctcattgcaa	gaaatactgc	actttcgcat	cagggttag	cttaaaagag	240
agtttttagt	caaggctcct	tcttgctcgg	ggatgagaca	aagctccaat	tttgaccctt	300
attcccttct	ttttctctt	cctcatcac	tctgcgagcc	tctcatcttt	atcttgaaag	360
tattctatcc	cccttctgat	aaagtgtttt	tcgttgctga	agcagttttc	tttacaacc	420
tcttgccctat	ctgtgtcaag	aaaacttgct	gagcttcggg	ttgacctcgg	aggcgcgag	480
cgttgccctc	catccctggc	ctggaagtgg	atgatgggag	tatgctgttc	caattcaaat	540
ccaacttata	catcgtgggc	tatgcttttt	gttttgattt	gtccttacat	agacttccat	600
gagtccttta	ttggtctcaa	gcaacgattc	ggagaagtct	gccatttatt	caaactcctt	660
gttctttctc	gttctaattc	gaacaagtgt	tgtctcgtaa	ttcctccttt	ttgattttta	720
atctgtagct	ccataaatgg	ctacgacaat	aattgtggca	gtggctacta	ccacaaaaca	780
gagtagatta	aagtttctat	ttccatgcta	ttttctgtat	ttgaaataat	gtctattggg	840
aagtagaggc	agatggcaaa	tactataagc	gtaataatat	cgcacccaat	agcccccatg	900
tcgaggggaca	aggggtccccg	atattgaaga	acgagtgtat	catccttttt	caacaaaagt	960
gttgatgcct	aaaaagccaa	aagtaacgtg	ataggc			996

(2) INFORMATION FOR SEQ ID NO:210

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 551 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...551

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:210

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actctagagg atccccggaa tgataaagcc gacgggatta cgaggettcc cgctttttct      60
ttttgctcca acagctccgt cagggccgtg tacaactcct gaactgcaca ttacagctta      120
cttcaaggtc ttcgatacgc tttttgattc ttcataaccg gcaatcatcc gacgcatggc      180
aacgaaagtc cgcattgtgc aatgttcaact tctattgctg tcggactgcg cagcaccgat      240
gatagatggc tactccctgc tcggtaaaag ccattcggagc aacggaactg tgttgagggt      300
ttcgggtaac cggtcacaaa ttgtgaccag ttccgtccat tcgttttcgg taagtccgaa      360
cataaaatct tccgggaagc gctgcaaatt tccctgacgg cctgtttgag cacttttgtc      420
tgcacaccgt agagttcggc caatgataat ccaatatcac tctgttgcca cgaatctcaa      480
gaattttatt cggatgacgc ttacatctgc tggatttgga ttcatatcat tgattttatg      540
gaatttggaat t

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(2) INFORMATION FOR SEQ ID NO:211

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 633 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...633

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:211

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atccccgaga attcgcttcg acaaaagctc tgatgctaaa aatcaagcat agcgacaaga      60
gaatacagcg aacaggataa gatgaatatg aaactcttct tgacataaca tctgttggtg      120
tcagcaaatc ttttgtttat aaagatgatt aaatttagga acaaagtact ttaaacatat      180
cactgacgac gagaaaagag gagggtaaag ctattcttag aagcaactcg aataatgaat      240

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gactagcaaaa	ccaagctcgt	aatgcagttt	gtggtgagcc	agaaaaagta	ttgacgtttt	300
tgatgataga	ctgagcagga	aagcctgtcg	ttactatacc	gtagtgaaaa	ggagcaggca	360
aacattataa	aagaacttga	tcagtaacaa	gtaaatattt	tgtaggggat	gatgcttcag	420
attatagcgt	agccgatget	ttcgtgatgc	gatgaattac	cttgataagg	caacacttgt	480
cgattttgca	aggggcgaaa	gagataatga	cttttgcaga	agccttcgag	tgcaaggaaa	540
agaacctcaa	gagaaaaaat	ctaaaaaagg	gaaagacaag	gccacttcgc	tcagaatctc	600
tttgcagaac	accagatgat	caataaagaa	tcg			633

(2) INFORMATION FOR SEQ ID NO:212

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 561 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...561

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:212

gagaatccaa	aagcgtaata	gaaaggtata	caagcaaaat	taggcttcac	ggagttggtc	60
ttttttctta	catttgtgga	ctcaacaact	aaatgcccat	atatgtacg	acttcatata	120
acatcgacaa	acagtaaggc	cgattttcta	tcccacatac	ccactctccc	atcgcgaaaag	180
gagagaaaag	aacgctatac	ctatgacgaa	caagcaggaa	taaggctatc	aatagccgga	240
caaaacataa	ggcacgcacc	cgattcgagg	ctgaatcagg	tgcgtgcctt	tctttatcgc	300
ctgtcgaaaag	ggctttcttc	atctacgac	tatatataaa	tggatgacaa	tctatataga	360
tatggaaatc	gatttatata	taaattgaaa	acattaatat	acagatcgaa	aatgatttat	420
atataaatcg	aaaatggttg	aatacaaatc	gtttttccat	ttcttagaaa	cccgaatccg	480
agctaaagaa	ttcgttttac	caccttttgg	gggttcaaaa	agctcttact	ttcaggtgct	540
atttagaatc	attcaaaaact	c				561

(2) INFORMATION FOR SEQ ID NO:213

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 676 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...676

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:213

tgtgtgcatc	ttgtgccaag	gatacgccgg	atgcgcccga	acagtacgca	tcactatccg	60
tgccaaacta	ccggaaggca	gtacgataga	gagtctcgag	gtatagccat	cgaattcctc	120
gatcttcgta	cccaacagaa	agtggaaaac	agctcgacaa	agccggtggt	tgctctctta	180
gtctggatgc	cagtgttata	cgattacgat	acgtggcgaa	atagggaaca	acagtatcgt	240
tgccacaagg	aaaactattc	catcgcacag	aatactacct	tgagagcttc	actcttggtg	300
cgaagatccg	cccttcgggt	ctgctgttca	aagaagtatt	tttaatggag	agaccaacaa	360
cgggcagatg	atgcacccgg	atcagtactt	cgcatatata	ataatagcga	taagggtggt	420
tatgccgatg	gtgtcgcttt	cgtcttgccg	cacatgccaa	cgtaacaggt	gaagacgctt	480
tcaccgagga	ttgaccaaga	acaaccgcat	cgtcctttcc	atgatctata	ccattcccgc	540
aacggttcgc	agtatcccat	ccaaccgggt	ggtcagctcg	tgatagccga	acggccatca	600
atcaccacga	tgccgagcat	ccgaattccg	tggaacttagc	ggtgccgatt	tggaagtcta	660
tgagccggat	cagccc					676

(2) INFORMATION FOR SEQ ID NO:214

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 294 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...294

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:214

ggcttggttg	tgatctcatc	aagacccaat	togtcaagag	ccttttcggc	aaaccgttgt	60
gataatcgat	cagatcttcc	acgatcggac	gaatccccga	cgattataaa	tacctgtcac	120
agctcggatc	ttttcttcac	actgcactcc	ggcatcaaaa	gggattctct	gaggagattc	180
aattcctctc	cctgagcatc	tcaagggctt	tgatcagaag	catcgtcttt	ttattacaag	240
ctatacatcg	ccgattttct	tgccgangat	aatgggatcg	ccatatacat	cgaa	294

(2) INFORMATION FOR SEQ ID NO:215

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 623 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...623

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:215

```

gcttctgctc caaaagggag agccggggcga ctgcaccatc accatctgca tagccgtacc      60
cctaaccatca aagaggtatg tctgacggcc gacattatat tgcagctttg gggcagcccg      120
aattcctgac agccgatatg gtaaagccgg agctgtagta gtggacgtag gtaccacgct      180
tgtaccggac tcgacagcaa aagcggtttc cgtctgacgg gcgacgtcaa attcgatgaa      240
gtggccccaa gtgctcgtag atcactcccg taccggggcg agtaggtccg atgacatcgt      300
atcgctcatg tccaataccc ttctggcaag taaaggattg tacggtaaac cctccttccc      360
ttatttgcca acgaccttat cgaagaggcc cgcatacata tcgggttcgtc cgggtatgatg      420
atcggcctct tttcttattg aagtgtgtca tcatgcgcaa attgctgcgt tgcttgccggc      480
attcgtttct agcgcttgn actttacgca ttcttaccga cctaaaatgg ggtatgccaa      540
accgaatttt gacacgggct cctcctgccc gatactttca agaattcgtt cgtatccttt      600
ccgttaggag gtaaaggcgt act                                     623

```

(2) INFORMATION FOR SEQ ID NO:216

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 381 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...381

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:216

```

ggccaaaaaa ctctgtgctg tagttgttcg gcttccatcc ttccaacttt gccgatatgt      60
accatatata ccgtatgcaa ggaaaggacc cgcttcgacg aaaccgccat gtcattcatc      120
aggtcgaacc gcatgccggc attgatcgca gttgcagata gtgcaagcga gtggaaacca      180
tcgtaatata ggtaccggaa ccatttcggg tatatcccat tcggtttttg agcccttcat      240
cgtatgttca gaccgggagc caagtagaat cctcttgatc cgatcatgaa ttcgcagcgg      300
caccgaccgg caggccgaca ttcatttggt gtcccacaca tategtctct tttcatgctc      360
tgattgctgc ctacgaagtt g                                     381

```

(2) INFORMATION FOR SEQ ID NO:217

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1957 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1957

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:217

ccgtggctgt	aatcatcgtg	gtatgatatt	ttgcgcggcc	aaaattagca	atactatggc	60
cgaacatgct	cttttctgaa	gtgtactgat	cccattctga	tgttaaaaaat	cggattttct	120
taccattagt	gtcctaaaaag	ctatttttgca	aaagattagg	agaggtagctt	cacagcacct	180
ctcctttcgt	ctattacaga	gccacctaag	gtaaatcatc	ttaccttggg	tatattccac	240
aaaaaactct	gatgagtaca	aatataagcc	tattcgccca	agttatccgc	ctgtgcctcg	300
tccattgatt	aagaagctct	ctacagagtt	tcaggtagac	aagacagcaa	gcatttcacc	360
tcatggcagc	acttagtgag	catgattttc	agcaattctc	aagctgtatc	tccttacgcg	420
agattagtaa	tggcttacgc	tagccacagg	taacctcaac	cacttaggca	tatgcacagc	480
accctctaag	ccaatttatc	ttatcagaac	gagcaccgta	cctcagactt	ctttcgagct	540
gctattatgc	cttgctagat	tatttcggac	agcagggtat	ggggcaaggc	gtaagtttcg	600
ttttaagcaa	cccgtcaagc	ttctagactc	tacgacctta	ccctttgcct	tgccctatac	660
gattgggcta	aatacacaca	tacgaaggag	ctgttaagct	tcatacactc	ttagacttca	720
agactctgtt	gcctgatatg	tgcatattag	tgatggtaaa	ggacatgatg	gcaagatggc	780
caatctattc	ctatcccagc	aggaagtatc	gtcgtggctg	accgtggcta	tgcgataccg	840
ccttgctcaa	tagttgggac	agcacccaag	tgagttttgt	agacgccacc	caaggtcctt	900
aaaatatgag	gttattcaag	agttggaact	ccagaacatg	ggcatcagca	aatactcgta	960
gatcagagag	tacggctcac	ggcgttcaga	cgcaaggcaa	gtacactaag	ccattgaggc	1020
atattgcccc	tacaacgagc	aacatggcga	tgtcgttgag	ttattgacca	acatagacct	1080
cttgcaagca	gtagtatagc	cttgctgtat	cgttcaagat	ggcttatgag	attttctttc	1140
ggaatttgaa	gcaacgcctc	agcatgaagg	cctttctgga	acaacgcgca	atgccgtaga	1200
ggtgcaaata	tggaaggctc	ttattcaatg	cttttgatgg	tctatctcaa	gagtatcgcc	1260
aaatatcggt	ggtgttgtct	aatcttgtct	cttcgctaag	aatcaacaca	ttaccaaga	1320
tggtctgatg	caatggctta	atgagccgtt	tacgcctccg	ccagagcccg	aaatcagctc	1380
ttttagcaca	taggggggatg	accacatttc	gaaaaattga	tgtcaggggg	ctaataccgt	1440
ccaggactaa	ggatccctat	gcctcaagaa	aaacttttag	gacactaatg	attttgaaac	1500
ccaaaaagg	catcaaggta	attctgcagt	cggcaagacg	gttaaagtat	atgtggtgct	1560
caanntgaat	cgcaggcaag	gcaaaagccc	ttttggcaaa	tgtaaatgca	gcagacttga	1620
tgctaaattc	aaagaggtaa	tcgaactgtc	tactcaggct	caagcttagg	tacggtagcc	1680
gatggcccaa	atcctgctac	ggcggctgga	aagatgccaa	aaagaatggg	actactgatg	1740
agacaatcat	gatgacctgt	ttgcgccttc	tgatgctttg	actatcgaag	ctgctgtatc	1800
cgaggccaat	gcttcgcagg	gattaagaat	caggccaagg	ttacggtgga	gcgttctgta	1860
gccgtgcgat	ggtttcaacg	aaagcccaga	gctatgaaat	taaagctact	atcaaattgg	1920
tagtattgct	gctggtgatg	ttttggctac	cattacg			1957

(2) INFORMATION FOR SEQ ID NO:218

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 782 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...782

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:218

```

aggtaagggg  cancggtctc  aaagcggggtc  actccgaagg  agagattcaa  tcggttctcg      60
gcaatgccac  caagatcctg  actcgctatc  tctatgcttt  gagcacgaat  tggattggaa     120
gctctgctct  ttccagggag  gaaacctcac  aatgccattc  cgcgcgaagc  tcatgccgtt     180
atcggcctga  aggctgtcag  aaagaacgtg  cacgagttat  cttgaacgaa  cttcgctgct     240
gcagtgagga  cgaactcaag  cgagtagatc  cgggtgtgaa  gctcgaaatg  aaatggtagg     300
aaagcctgca  tatcgatcgc  attgtgacac  gaagcgtcgt  cttttcgcgc  cctgtatgct     360
tgccctcacg  gcgtctacgg  tatgagccat  gaatcgaagg  tttggtggaa  acgtcttcaa     420
acttggtctc  cgtgaagatg  aagaagatga  taagatctac  gtggagacca  gccaaagaag     480
ctcgacatcg  ctcttatcag  cgatatagcc  aatacagtg  catccgtatt  cgagcttgcg     540
atgctaaaat  cagcttcgcg  gatccgtacc  ccggtggaa  acccaatccg  attcgccgat     600
tttgaaagcg  gcactctgag  cgtatgagcg  cattttcgtc  gtaaacctgc  tataaaagca     660
atccacgcag  gtttgagtg  tggctcttcc  tggataaata  cccctatctc  gatatggttt     720
cattcggccc  taccoccgag  atgtgcaactc  tcccgtagag  aagatcgaag  tcaagacggg     780
tc

```

(2) INFORMATION FOR SEQ ID NO:219

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 349 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...349

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:219

```

gtttcggcgg  ataaaatgtc  ctcgatccgc  ttcattctcc  cggcaacgaa  atgcgcgtat      60
agccctgctg  ctgttgatc  tgcaagtgtc  cacgcagata  cgtccttgag  gggcttgag      120
ccctaccaga  agatacagtt  tggagccatg  ggccgatcgg  caacgtaagc  gaccagatcg      180
gccaccgtat  gtttctcacc  tcctctccgc  ttgtcggaga  gatggtcctg  cctacgcgag      240
caaaggcagg  cgcaggta  cgtatatctc  ggtcgatgtg  gctacngtac  tcctggattg      300
cggttacta  cgcgttgctc  gatggcnatg  gcaggaggca  cacggcgat

```

(2) INFORMATION FOR SEQ ID NO:220

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 625 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
 (B) LOCATION 1...625

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:220

cgatcttctt ccagtatgta ggccggagat gctatgtcgt ggtattttgc atctcttagg	60
attagttctc attcggatc agttccaaga acagctcttg agctgtgcct catcaatgac	120
agagggggcg tcgatcatga catcccgccg gcattgttct tcgggaaggc gatgcagtcg	180
cggatgctgt ccaaacggcg aagagcgata ccagcggtc taagcccgtg agccaatccg	240
ccgtgggagg tgctccgtac ttgaaggcgt tcatcaggaa gccgaactgc tccttgcttt	300
ctccggcgta aagccgagca actcgaacat tttctgctgc aggcactgtc gtgaatacga	360
atggaaccac ctccgacttc gacaccgttg ataccatata gtaggcattg gcacgcacgg	420
nacctggatc ggtatcgagc aagggatgtc ctccgcttc ggactgggtg aagggtggtg	480
catggcgtag atcgcttctg ttctctgtcc cattcgaaga gggggaagtc cacgacccaa	540
ggcaggagaa tttattcttg tcgcgcagac cgagctgaga gcccacttga ggcgaagtgc	600
gcacagttgc ttgcgcgtct tcatg	625

(2) INFORMATION FOR SEQ ID NO:221

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 679 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
 (B) LOCATION 1...679

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:221

cggagccgct tcgccggagg gaaaaagatc cgaataacgc accggatggc ataaccgaag	60
acagtgaatt gccgcgcca tccggcaata ctgccataat ccaaggaatt ccgagagcaa	120
gagaagcacg atctatcaaa tagcgcgtc agcattgtcc gaagcatcga taataaggtt	180
gcactgcgg gccaaactctc gggcattcag ctccgtaaat ctttcgggtg aagcttcggg	240
acggcatcgc tattcatcgc ctgcaaacga gctactgccg caatggcttt gggcgcccc	300
aatcggcttc ggaaaagagc acttgacgtt ggagattgct gattcgacgc gatcatcatc	360

gacaacgctg	atatgcccc	cgctgcagc	acgagatatt	gcaggacagg	gcaaccaagg	420
cctccggtc	ctatgacaag	gcatgcgaac	catctaatacg	ctgctgtcca	tcggtccca	480
cttcgggaag	gccgtctggc	gagcgtaacg	ttcggaag	tttggtttca	tacaaatgat	540
cggatggagg	aaatgccgga	gggaaaaccc	catgtgcagg	ctttccctcg	aggccccaaa	600
ccattctcta	ttaatgatcg	taagaaaggg	aagaacnata	gtcattcgtg	cgatgactat	660
tcagcccaaa	gagcagcca					679

(2) INFORMATION FOR SEQ ID NO:222

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 684 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...684

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:222

cgccggagga	ttcgtatcag	ctaatatoca	ctcatctgtg	tcgggtaagt	gctgaagatc	60
gataacgtat	acgactcaag	cggtatcccc	aagcccgcgt	cttcattagc	gtagaagggtg	120
acgaatggga	agagggcatc	gacgctacc	agccatcgtc	aaagaatgca	atctggatgc	180
aaaagaaaac	gtagccaaat	ttctgcagcc	cggtattgtg	ggtcttggcg	gtgctacctt	240
ccctaccatg	tgaagctgtc	ccctccctcg	ggcaacaaaag	ctgagatcct	gatctcaacg	300
ccgtagagt	cgagccttat	ctgacgagcg	accatgtcct	tatctggagc	acggcgaaga	360
gatcatgatc	ggcgtgagta	tcctgatgaa	agcattcagg	tacacaaggc	cgatcatcgga	420
gttgagaata	ataagaaaga	tctattgctc	acctcaccaa	actggccact	gcatatccgg	480
gcatagaggt	atgccgttga	aggtgcaata	tcctcaaggc	ggtgagaagc	agctgatcgt	540
gcagtgatcc	gcaagcaggt	aaaaagcggt	gccttgcta	tcagcacagt	gccgtagtac	600
caaacgtggg	tacggatttc	gccgtgtacg	aagcagtcag	aagaacaagc	ctctgggtcga	660
gcgcacgtg	acggtacagg	aaaa				684

(2) INFORMATION FOR SEQ ID NO:223

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 666 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...666

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:223

```

cggatcatatc tggatgatat acgtagtatg aacaatgtcg ggtcagtcctt agaacggccg      60
atgctttttcg gttagaaggg ctatgcttgt gcggaatcca gctcggccac ctcatcccga      120
catacacaag acagcttttag gagccgagac agtgtgaaat gggagtattt ctcttcggta      180
gtggatgcaa tagaagattg aaagcaaaaag gatatagtat ctgtgcgata gaacaggcgg      240
aaggagccta tccttggaag atttctcccc ctcaaaaaggc acacgctacg ccctatcttt      300
ggcaatgaag taaaaggagt acgacaggaa gccatcgacc tcttgacctc tgcttagaga      360
taccocagtt cggcacgaag cattcgctca attaagtgtc acagcgggaa tcgtcatctg      420
gcaactggtc aagccgctac tcccctcctg aaaaaataat acccccgaaa aagggggaaa      480
aagagctgtc aaggaataag agccaaatcc ttgagagaaa ggaacctctt tgcaactaac      540
ttttaggact tggtagtct cagacggcag caatgagcaa ggccacggat aggcggaaat      600
gccttcctct cgtcctgtga agccaagttt cttccgtgtt ggggcttcag tgaaatatcc      660
gacacc

```

(2) INFORMATION FOR SEQ ID NO:224

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1812 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1812

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:224

```

cgtgggttgat ctgcaaatcc accgattcta cctttctact aagaagaatc ggatttagaa      60
aaagtgtttt tctctatcga tcatgcaaaa gggacaatgt taataagaaa tatatgcctt      120
atggcacggg ttttagattct gtcctaagaa tctcgttacg gatctctctg caaaaaagtt      180
gcaagtagcg gttaatatgg ggagtataaa gattggcata ataaagattc gttgtggttg      240
cgcgatgtca taccttgcac ttaatggttt tcgacgaaag tggcgagaaa acgaaaagta      300
tactgttacc ctcaatcggt atgattatca accgactacg ttttttgcca tatgctcgat      360
ggagtagctt taccggatat caatgcttct ttgtcgatgt tgtaacacat gctgacaggg      420
tttatttggt agcagccaca gtaataagac gctgttgat tcatctgaca ggaaaaatcc      480
tgttcattgg ctttactatc gtcttcgggc ttgtccggtg catgtaggca gatagccgca      540
ctgaagatgg acgcgcttgg attctaacag attccggtat ttatcaaacg atgacttcac      600
aaactggagt ttgctccctt ctgaagtccc tgtgaccccc tgctgggtgc catggttttg      660
ccacagggaa gtcatacact ggcattcttg ctgaaaaaga tggctctctg ttctttgcca      720
ccaatatcga tggagccatt cttggcagga gcaagctccc gaaactttcc ctggtcgcaa      780
tttcgtactc aactataaa agcaacaat catccaatgc tccgtttagt cgggggtgtaa      840
cgcgtagcgg tgctcctgcc acttccgttt ggcacacgac catggaaacg attggttttg      900
acttgacttg gctgcgggag ccattccgcg acaatggaaa aaggggcttt ggtgcaaaact      960
ccatcggatg gtaacttgta tattatgcc aagaacaagc cgaaggata aagcgagtag      1020
ctgtggcatt tcgactgata agggcatcac atggaaacgt ggagccgccc atattatgtg      1080
ccggccgata ctttctacac agccggctat ccgttgctgt tcgtctgggt tttgatgatg      1140

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gggcttacaa tatatatcag ttgggaggcg ttagctttca ggaacattct tttcctcaat 1200
atggaagggt atcctgaaac tgaataaaac aattagtaag aacctatgagg caccgatctg 1260
tgccgccatt gcttggttgc agtgtgtaac ggccggatag ctgctcagga tttctctat 1320
gaataggagg aggttttggg gctgctcagt attttggcga tgcaaacaga ggttggtcgg 1380
ttcatccgga gtaggtttgg agttggtcgg acgttacaat ttaattttcg ctgggctttc 1440
agtaccatgt tggattggcg tacattgaga gcgataccga taagtccggg aatgtcttcc 1500
ccgattttgc tcaagcggat ttaaggtcgg cttgactcag ctccacgta gaagcgaatt 1560
taactttccc cttatagcga tggctataag tatcttggtg cagctcgggt gtctcctatg 1620
tagcggccgg gttgtctttg ggttttgctt cgggtgctaa aggttcgctt ttgctcccg 1680
gattactgcg ggaatgggag tgaagtataa gcttaaccgc ggatcaatgt cggatcagag 1740
tattctttca cgggggttac ttacgatgct ttggatgcgc tgacggataa aagtgtttgg 1800
ctcagggatc ca 1812

```

(2) INFORMATION FOR SEQ ID NO:225

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1216 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc feature
- (B) LOCATION 1...1216

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:225

```

cgggcagatc gttgcgcgtg ctcacaacag agtggaaagg ctaaaccgacc tacggctcat 60
gccgagatgc ttgccatcac gatggccgta gatgccatgg ggggaaatac ctccgcgact 120
gcacgctgta cgtgactgtc gaacctctct gatgtgtgct ggcgcacttc gctggacaca 180
aataccgcga gtagtgacgg agcatccgaa cccaaagtgg gctacaggct gttcaccgat 240
catgcctcca tcccaaatgc cagctagaag gcggtatatt ggccggacga tcgggaatct 300
gatgcgtagt ttctttgccc aacggcggta gccgagcaac acatatatat ctttgtgcaa 360
tatggcagca ttcagtgtac atatattggg ctccgatctg ccctgccaac cacacaccac 420
catccctctt cgcaagtaat cacctgcgcg acaaaactcta catgatcgat tgcggagaag 480
gtgtccagcg caattcagac acgaaaagct ccatttcgga cgtctcattc atatcttcac 540
agccatctcc atggcgatca ctgttttcgg totgcccgga tttatctcac gctcggctctg 600
ctggggcgta ccggcaccct gcatgtacat gggccggggg aatagagcgt ttcctcagcc 660
ccatattgga gcagttctgt caccgatgcc ctatcagggt gagatacata cgatcgatgc 720
ctcccgacat gcgctgtaca tgaggacaaa tccgtcaaaag tctatagcat accgctcagc 780
cacccatccc tgcgggtggc tacctcttcg aagagaaatg ccgtgcaagg cattgaacaa 840
agcggctgcc gagttctaca atattccgct tgccgaatat ccctcatcat agaaggatcc 900
gattacacga caccgatgg gcggatcacc ccaaccgaca cctcacgacc ccgggtacac 960
caccagacg atatgcttac gctcggacac ggagttttgt ccctccatcg tccctattat 1020
tcaagggtgtg atttgctcta ccatgaagct acttttatgg aggaggatcg ggcaagagca 1080
aagagacttt ccacagtaca gccaaagaag ccgccgaaat agcacgaagg caggagcaaa 1140
acgcctctc atcgggcatt actccggcag atacaagacg tccaaggttt gctggaagaa 1200
gctcaaaagc tattca 1216

```

(2) INFORMATION FOR SEQ ID NO:226

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 793 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...793

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:226

```

ggttaccggc tctctgaaag tattgcagac cttttaagat cagtaagggtg gtacgatcgc      60
cggttgtatg gtcaaaggaa ggtaagggtca agcgaacagc aagggttcgtc tcatacgoga      120
cggtatagtg atccacaccg gagagctggc tctctgaaac gattcaagga cgatgccaaag      180
gaagtgggtg cgggaccgaa tgcggtctta atctggctca ctogaacgac atccaagatg      240
gtgattaatc gaagctttcg acgagatcga aatcaaaaag actctctaaa gatcaaccga      300
gacgggttac caccatgaa cgcgatcgat ttagccatac tgaaattttg gcgataggat      360
tactgaaagg cctgtttgat ggtatcatca aaaggcagtt tcacttatag ccatagtcgt      420
tgccacgtat ggttgtgcct tcttgccgtt cccatagaga cgtggatcgg accttttttc      480
ggcctttcac aggcgtggct catacttttg ctttgatcgt tgggttcttg gctattttgt      540
tatcatcccg atggtcgcca ataaggctctc gaaaatcgtt ggcaagaccc tatcggcatt      600
ctcaatcaact tggccggcgg aatagtcggg ataggggttag cagctattct gatgagctat      660
cttttcttga ttgcccgaac tgtttttcaa gagacgaagc ggacagtgc aatccgtccc      720
ttcgcaatac ttcgagctgt atgaccatgt aaaaacatag tcccaacttt tagcccccac      780
cggcgtttat gaa                                     793

```

(2) INFORMATION FOR SEQ ID NO:227

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1485 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1485

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:227

```

agcgtttget tcttccttac ctctttaatg gggacggtgg cattcctgct aaagtcctac      60
tgagtgccta cacataccac ccgatgaggg ctcccttttcg gatatgtcag cagcttttctt      120

```


tttccggcaa	cgaatgctat	tcgcttttgt	ggtttttggc	ctgcttggtc	agtctatttt	180
gcctgggtgt	tttttacctc	ggaagtggat	ggagggaccg	aagattttcg	gagcttacct	240
catcgctgcc	ttctgcatat	agtcaccgaa	tacatccctg	tggcattcga	ggatatcctt	300
tctgtattat	agcagccttt	aacaattttc	actacttcgt	tctgggtatga	tgttataccg	360
ctattccgat	cgtatagttt	ccagacgagt	atggtagccc	tgcttatcgc	tttccatgtg	420
gcacttttct	cccgtttctt	ttgcccgagc	agtcacgtgt	cttgggggta	ttgaactggg	480
cttattatac	ctgttcacgt	ttgtccttta	tggcgtgtcg	gtaaaaatcg	gagacaaggg	540
atgcctgctc	cattgcttca	cggatatagg	ttgtacagct	atcccatatc	attttttcat	600
ggttcgtgct	ggtcgcattg	agaatagttc	tttatgacgc	tatgagctga	gcaccatgat	660
gatcaatgga	gctattgcc	ttagtccata	gccggtttgt	tcataccgct	ttacctgtcc	720
aagtttttgg	acaggaactt	ccggtttctc	tcaagccgct	ggtcggattg	taagcagacg	780
cagagagctg	cgcaagaagg	gaaagttaag	gttcgaactt	acgaagagaa	aaatatacat	840
aacgaacgga	cttaacgaca	tgattccggc	cgaatcaggg	aacctcgcaa	atagccatag	900
acacggetca	cactcgcaga	gtccggcact	gagttgtcag	catattttatt	cccggattca	960
caggtcggct	gaccgtaaga	cggattgtgc	ggtgcaaacc	aattggagaa	acatctccat	1020
cgttgcatcg	gacgaagttg	tagacctctc	agcctcgtga	caaattccaa	tcgggtgctt	1080
ccttataagc	tgtacctggg	gtgatgatga	aagacctgtt	caggaatgca	tctccggccg	1140
gtagaaacac	gtactatctc	cggccagcat	attgatgaat	ccagttcgta	gaacgaacca	1200
tcgagcatat	ccatcccttt	cttctacgct	ccaacgtaat	ctgcttgctc	agatcgattc	1260
gctgcttttc	cagtcacccc	gaacgctttg	gcagatggcg	atatactctt	ccaaatcatg	1320
gcgccatacc	acatcagcgt	gctgtcgtaa	tccatgcgag	tagtgccgta	ctggcaaaca	1380
gattgggtgt	aaaccgcttc	acgaacacta	tccgtcaatt	nggatcgat	atattagcaa	1440
agtgaccatc	ggccacataa	agttcgacca	cagatccttc	aactt		1485

(2) INFORMATION FOR SEQ ID NO:228

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1337 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1337

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:228

atccccgcaa	gctcgaaaca	cccgaagccg	taacggcttt	cgagggactt	ccatacctga	60
gccgggcctt	gaaccgcgct	tctgcgtacg	cgaaggcggc	aggaagtccc	cgttacgaag	120
agatatacgg	acgaggcttt	ctggcagtg	tgcatttttc	tttcgtcgcc	ggcaagcatt	180
ataccgaggc	ggatgcccgt	cgaacatcgc	cgtggcagtc	attaccgaca	ggttggcgcg	240
ccggtcttcg	gctcttcgag	cgaggccgct	ggccggcaag	ctctgatcaa	tggggcaaat	300
acaccgtctg	cggagtgggt	cgccatgtga	cccccttctg	cgattcgctt	acggagatgt	360
gtggatgcct	gtgttcaggc	tgtacgaaga	aaagtgaaga	acaacctatt	ctccagattc	420
aatgtaatct	gtctggccaa	agcccgaagg	acttcgatgc	catcaaggaa	gaagtcgggg	480
ccttgactgc	aagtgcata	gtgtgcagga	gaagttcaat	atcagttttc	ccggccagct	540
gccgatcagt	tcacgacgat	gcaccgcaaa	tttcaccgtg	acgataccaa	cctctggagt	600
atcgccgtcg	cttcattctc	ctcctggcag	tgtttcttgc	atccccggcca	tcaaattctt	660
ctgggtatga	cccttagccg	tatgcgcgcc	gtttggccga	attgggcgta	cgacgctctt	720
tcggagccgt	ccgatcgata	tagtccgtca	agtgtgggca	gagaatatgc	tgatcagttc	780
gatagagggg	ctttcggatt	gcttttgagt	tatctgggtca	tggccctctt	tcctcgtggc	840

tectcagcgt	ggggagccgg	ggaatgatgc	agggcgacat	cacggagcca	tgttcaatcc	900
cgtcattttc	ctgatagctc	tcgtcttctg	ttgctgatca	atctgctcag	tgcctttatc	960
cctgcctggc	gcatatccaa	acacccatcg	tagaatccct	ctcccaacta	cctcatcata	1020
cagatattac	atgctacatc	atattatcaa	gatcatccgc	gccgaacgtc	gtgccaactc	1080
tggatatggc	tggagatgct	cgtcgtatgt	ggcctgcttt	ggttcgtacg	gactatgccg	1140
tgacagctct	gcgtgcttgg	acacgccccat	tgaactcgat	atagaacacg	tgtaccgcat	1200
cacgctggca	accgtacaaa	aagataggat	ggaaaatgga	aagagaggtc	tgcggatcag	1260
ggaaaaacca	tgatcaaacc	ctcgatctga	tcgctgcata	tccggagtgg	aagcgcttgt	1320
ctcacagtgg	ggcggca					1337

(2) INFORMATION FOR SEQ ID NO:229

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 530 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...530

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:229

cctgaaagta	atatccgat	caaggggtgt	gcagaggagc	atgtcatcct	gtcgcacaag	60
ccatcgaaaca	tatctaccag	atcacccgaaa	cgatcgcttt	gaggcatacg	gcaagggcgt	120
tgatggtgaa	gtcgcgacga	cgcaaatact	ttccagcgta	ccatcttcga	ctatcggtt	180
acgactatcg	tgtcggaact	ttccttacgg	gcacccacaa	attctatctc	cagatcacca	240
tgcttacttg	agcgggtaccg	aaattggcga	aaacggatag	gtgagccttc	cgtccagctt	300
cttggctaca	gctttcgcca	ggtcgatacc	gcgccctacg	gctctatata	gatatctttg	360
gaaggacgat	tcaagaatat	atctcgacac	taccacccac	gacataaggt	ttccagtccc	420
aactgatctg	ccactttctg	cataagacgg	aatatcggga	tgtcgattta	ctaagaatta	480
actctttgtc	ggcattctaa	aaaatcaagg	aatggattgg	ccgacaaggt		530

(2) INFORMATION FOR SEQ ID NO:230

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1067 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...1067

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:230

```

gttgctcgatt tgtcttcttt agaattcttg tagaggacgt tttttcgcat tgcagttttt    60
tcagtacacg tcgcttttct caaccgttga agaaaatctc gtcttggacg agggcgacgc    120
cgtagatggc tgagaggcga tctcgcagat ggcggcatcg ttgccgcgaa ggctgacggt    180
aagcctgcaa ttctcgcaaa atcctgcgag cggatggagg ctccggcacc ttccaccagt    240
cgcatacttc tcccagcaaa ggatattcga aggcgatagt cagttcttca tacagatctc    300
ttccttcggg tcggctgctt cgagggtctc gcgagccgct tcggataagc aacgataaga    360
ccgctcgtgc ccagcttgac acctccgaag tacgcaactac tgcgacgaat acctgcgtaa    420
gccccaatga ggtgatctgc cgaggatggg tttgccggca gtccccgatg gctctccgtc    480
gtcattggat gtgtgcgttc gcctttgget cccagcttgt atgccagca tacatggcgg    540
catcgaagta gcggcgacgc agatcggcca caagcgacag ggctccttt ccgactttac    600
aggataggcg aaagccagga agcggctgcg tttctcctgt actgtgcttc cgaggagca    660
ctgatcgtga ggtaggaatc ttccggcatg ttcaaaggag agcctcatct gtaccttct    720
cccgggcggc aaactttcgg acaggacgga gaggagcgta ctcatattgt tgatactggc    780
gagctctctt cgctcacttc ctttttctgc aagcgcaggg tcagcagacc gtaatggcag    840
tcaggcaagt ctctatctct cccgtattgc tcctgcact ctggctctaa gctgtacgat    900
ggcagggagc acctgatagt agagtcttg aaaatcatct ctttggggtc cgccatcagt    960
ccgtgagtgt atctcttcca ttgcatgatg gctatgcgga cgatattgat atgccctgc   1020
tcggaacgc cttcgtgcaa gcatactct caccagcttc ggcatatc   1067

```

(2) INFORMATION FOR SEQ ID NO:231

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 389 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...389

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:231

```

cggtcgggcc ggactttctt tctcgggaga catggccaag ttgggtata cgtgaccgta    60
ttcgaagccc tgcacgaaat cggaggagtg ctcaagtagg aattccggaa ttctgtcttc    120
cgaatagtat agtcgattcg gagatcatct tctcgaagag atgggcgtac gctttgagac    180
gaatacgatt gtcggcgaaac gatcgcatat gatgacctgc atgaagcagg atttcgcggt    240
gtattgtagg aagtggtgcc ggtctgcccc atttcatgaa tatcccggtt gaaaccttgt    300
aggagtcatg tcttcgaatg aatacctgac gcgcgtcaat ctgtgcatgc gagccaagcc    360
gacagcgaca caccggtttt caagggcaa

```

(2) INFORMATION FOR SEQ ID NO:232

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 457 base pairs

- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...457

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:232

cagcttggag	gctccgagtc	cgcgctgaat	ctgaatggta	ctggcttgat	catcagacca	60
ctccaattgc	tccaatatac	tttcccgtct	tccatacctt	gacaggaact	ccgttgatga	120
gtacaccgaa	gttgtaagt	tccaatcacg	cacattggta	cgaccatcac	cgaaacctcc	180
gcttcctttt	gtcgtaaggt	agagggagtg	gatttaacca	gttcgggaaa	ttcgacattc	240
aacgagctgc	ctgaatatca	gccacacgga	tattggaaac	gggtaccggc	gtcaacggtc	300
tttgggcacc	acagaggcta	ttacctgaat	ctcatccaag	ccgtggcctg	gggatcgagg	360
agaatcgtag	cgaggtcttc	ttgagaacct	ctcctataga	gcgagttacg	gtagcataac	420
ctacgcaacg	gaaagttaag	aagatttggc	cgggtact			457

(2) INFORMATION FOR SEQ ID NO:233

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 495 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...495

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:233

ggcctcatcc	ggtatcggag	ccatcagctc	tgccatctgg	gtatgcgtga	ggccggcgac	60
catatcgtag	ccggcaagac	gctctacggc	tgcaccttgc	cttcctcacc	cacggactga	120
gccgctacgg	tgtggaagtc	accctcgggg	tacccgccat	ccggaagagg	tggaggccgc	180
cattcgcccc	aatacgaagt	cgtctatctg	gagactccgg	ccaaccccaa	tatgtacctg	240
accgaatcaa	ggcagttctg	gacatcgctc	ataagcacga	aggcgtagcg	gtcaggtgga	300
caatacctac	tgcacgccct	atatctgccc	tccgctggag	ctggtgocga	catcgtagga	360
cacagcgcg	ccaagtacct	gaacggacat	gggacgtcat	cgccggatto	gtcgtaggta	420
aagaggacta	catcaaggag	ggaagctcgt	cggcgtaacg	gacctnacgg	nggccaatat	480
gagtcgctcg	tgctt					495

(2) INFORMATION FOR SEQ ID NO:234

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 452 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...452

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:234

cttgaaatta aagatacaga tgttcttgct ttcgtacacc atccaatgtc aatgcggaaa	60
accattctat tatcaatgcc gggcaagaaa gccttgataa gcagagccta cagctacaga	120
acaaattggt gctaccccct ctgtcaagca tatgttcaga atggcaaaat tgtttagag	180
gaagagtatt ccaagaggaa gtattcaatg caactgggtca acttgtcaaa aatgaatccc	240
ttgtcccggg gtctatgttg tccgtataac ggcaaacggg gtaatgtatt tcctaaagtc	300
ttggttcctt gatttataga gctaagattt aaacgaaaac tgcccttctt aatgttttat	360
aagaaggcgc agttttcgtt tctctcattc catctccggg tggtcgtcga angggactgc	420
ctgtcatctt tcaaacgagg gatatcagct tc	452

(2) INFORMATION FOR SEQ ID NO:235

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1206 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...1206

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:235

ccggccgttc gcgttatttc cgcaaggagt ggaatgtttt gaagcctgaa actcggaggc	60
tatgcgaaaa tatcgcaagc aaaaggagaa atactaccag agtatatgaa ggctcagaaa	120
aagcaaaatc aagaatggcg caaggagggg aaaagctccg ccgagagatg gaaaaagccc	180
gcaaacataa ccgcgagaaa tgaaaaaggc ccgggaagaa ctccgaaaag caggagcaga	240
atccttctga tttttcccga ttctacctgg aagatagata tggccgatct ggatgagctg	300

tattattttcc	ggttattcat	aaaagcttgc	atttgagatt	ggatctgctc	ttgaatttct	360
caaattctga	gaccaaccaa	agccggcaca	aacactacat	ttgtcctgta	actaaaaata	420
atatggagca	caaggacgat	aggggaatat	cctcatctat	caatcccaag	atgagaccat	480
tgcacaaaga	gctgttcttt	ctgctcgctt	gttcccggtg	tgtttttgac	cattctcggt	540
gttttgacgc	ttggggatta	gtccccttcc	cgcacactcg	agggcaatgc	cctcgagggtg	600
ccggcggttt	acgcctatct	tgcgccttga	agcacaaaag	ccccggcata	cgcttgagat	660
tgtaggccat	agcttcaagg	atattcggtt	atgtgtcttg	gctaaccctc	ggtagcgaca	720
tcgtccgcca	cagaacatcg	tcgaatacta	ccgaagggtac	gttctatcaa	gcagcgcgtc	780
ttacgatcat	ccgattgagt	tgtttctgac	tttactgag	ggcttgacct	cgaggggcctt	840
aagcatacgt	cgaacagacg	ttgtaagcag	attcctcact	aattgggttc	ggaattggcc	900
ggaatgcggt	tcgagttttc	tgagattcac	ggcgagaatt	tttccggttg	ggcgcgtaaa	960
atttttactt	cccgcgcgca	acgaaaaaat	tcccgcagcca	cgttttttcca	aacgctaaac	1020
cgccatttgg	acctttgcac	ggcgattggc	gtatatattt	gtttggtaat	tcattgggaat	1080
agggaggtat	tttgnatatt	tgagtattaa	aacagcataa	tatcctcatg	gcataccaat	1140
ccagaatacc	gatggctgta	cattgcagac	gcnttcttaa	aggggtatcgc	aaagccaaac	1200
gacttc						1206

(2) INFORMATION FOR SEQ ID NO:236

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 626 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...626

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:236

ccgccccatga	gctcggttat	ctcctccggt	ctcgtcagcc	ccttcatcgc	ggacgataga	60
agaggagtgc	tcgatggcc	tctatcccca	gcccgatcca	caggaggcta	tgctgcccac	120
ttccatgttg	cgcaaaagtc	cgtgcacccg	tttttgctgc	gatcgaaaca	tcccaactcc	180
gtaaaacggc	tcagcaactg	cgtactttct	tcacgagctg	ccgatcggga	gctagtgtac	240
gaatcaactc	gcgtatgagg	agaggaagcg	actccgctca	tcggcggaga	aaagggtattg	300
tcgtgtattg	tcattgagga	tacaggatgg	gataatgaat	agtgacgatg	gatcatactt	360
gtagtcggaa	agcatatcgg	ttagagcaga	gggagaaaag	gcgaacaaaag	gattcgctga	420
atttttttat	ccggcttctc	ttcgccagcg	tttgagatcg	agcggttcgc	tctgcaacaa	480
gtcctcgaag	agatggcttc	caatcggtgg	acagtaggct	cgtcatagat	gataaccatta	540
attcgaagtt	attttccaag	ctgcgggaag	ccatattcgt	agagccgacg	aagccacctg	600
actatcacca	ttatcagctt	ggaatg				626

(2) INFORMATION FOR SEQ ID NO:237

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 987 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...987

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:237

```

atttcgatgg ctgaatatgc tcgcatatca ttccatccat caaatatgcc tgggaagccgg      60
catgatccca caggtacgct ttggtatcac gttctctccg tacacacggt ggagtactac      120
tccattctgg ccgatgagct gatcgacacag gggcaccgag atctgcctga aagatatggc      180
cggtatcggg cgtcctatct cctcgggtca gctggtgaaa tccatcaaga ccaagcaccg      240
cgatgaatca tcgaatatca cggccactca ggtcccggct tctctgtcgc ttctgtctgg      300
aggtttgcca gaatggggct gacatcatcg acgtagctat ggacctatct cttggggtaa      360
ggtgcatccg gatgtgatca ccatccagca gagctcaagg atgccggctt caaagtgccg      420
gagatcaata tggatgccta ctgaaagctc gaagcctgac acaggagttt atagacgact      480
tcttggggcta ttcattggatc cgtcgaacaa agagacgagc tcgtgctcgc tgggatgcgt      540
ctccccggcg gtatgatggg atccatgatg gccgacctga aaggggtaat gcaggatatca      600
atatgttctt caaaggaaaag ggcgagccgg agatgacatc gatcagctac tggtagctct      660
cttccaagag gtagagtatg tatggcgcg cttggctatc ctcttttggg aactcctttc      720
agccagtatg tgaagatggt gccctgatga acgtgtacaa catgatacgg ggcgaagggc      780
gttgcaagcc atcgaccaga acacatgggg tatgatcctc ggcaaactcg gcctttgccc      840
ggcaaactcg atccggagat catcgctttg gcaaaagaga aggaatggaa ttttcgggatg      900
ccgatcctca gcaattttat cctgatgcct tgacgaattt cgcaaggaaa tggatcagaa      960
cggttggggag tatggccaga gacgaag

```

(2) INFORMATION FOR SEQ ID NO:238

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 583 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...583

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:238

```

cgcagtacga agcgggatggc aaagaaatcg tggaaatcatg gaagttgccg atgtaggtct      60
gttcgatctg tctgcatcct acaattttcaa gcttggttac tcagcaccac attctatttc      120
aacatggaca acgtagccga caagcgaatg tgagcgatgc cgacgacaat atcatcggta      180
agaaacacga tgaggctcgg ctctcgtatg gtacggtttc ggccgcactt ggtctaccgg      240
tattctgtaa acttctgatc ttacactgat cctactacat aagacggacg aagaggtgtg      300

```

tcaaaatgaa	aattttggct	caccctctat	attttgagat	tctctgaaag	ccggatttaa	360
ttataaagag	gctgtgttga	aattatTTTT	cgtttcctct	cactttttgt	cgaagctgtt	420
tggaatttgt	cgaggcctct	gatgggggtt	gtcgcatttg	atttggcggg	tcgggagatt	480
ctttctcata	gcacgaaaat	agcagggtgt	agaagtcggc	ttttggtcct	atttttgtgc	540
tatgttgggt	gtgccgtaaa	aacttgaaaa	agcgaggtac	ggt		583

(2) INFORMATION FOR SEQ ID NO:239

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 785 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...785

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:239

ccggaaatag	gagaatggtt	gcttgcaaac	gagtcggccg	tatctgccac	gaagtggtaa	60
agggctttct	caatctgacc	attgctccga	gggtatggtg	gagctgctga	acgagatccg	120
agcggatata	aacttcggac	ataaggtgct	acagaggata	gcccgcctgg	aatgggtggag	180
tattcttctc	cgaatacaat	aagccgttac	accttggaca	cgtagcgaac	aacctatttg	240
gttatgtctt	tccgagatca	tgaaagccaa	tggctatcgt	gtggtgaaga	ctaaatcgta	300
aatgaccgag	gcattcatat	ctgtaagtcc	atgctcgctt	ggcaaagtgg	ggagatggtg	360
tgacgccgga	gaaggccggt	aagaaaggcg	atatctgata	ggagacttct	atgtcctttt	420
cgataagcac	tacaaagccg	actcaattcc	cttatggctg	aaggtaagag	caaagaagaa	480
gccgaagccg	aagcaccctc	atggctgaag	ctcgtgagat	gctacgattg	tgggaggcag	540
agacgaaaag	gtcgtcgata	tctggcgctc	tatgaatcag	tgggtataga	cggattcgat	600
gccacataca	agatgatggg	tgtagacttc	gacaagaata	ctatgaatcc	gagacctatc	660
tcgtcggcaa	ggaagaagtg	ctgagggttt	ggaggaaggc	tttgtttgtc	aagcattccg	720
atggtttctg	tatggcggat	cttgacaaaag	gatggcttgg	atgaaaaatg	cttttgcgtg	780
ccgag						785

(2) INFORMATION FOR SEQ ID NO:240

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 631 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...631

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:240

```

ccattcaag ggcagattgg attactttat tagtaataat ggatatggcc tcgtagaaaag      60
gcttatttcg tatatatcac aaaactttat ttctatatcg atatatctga aacgctcatt      120
tgtttgacat agagtggagat tacatgcttt caatataaag tttccaactg ttcattcttcg      180
ccatgtacag gatgcttcct cctcggatta ctacgggagc tccgttgcca tatcggggtt      240
tcagagctat acctcatagc ctttaggctc ctgcacttag gcaatcccca tttacttgca      300
taatctatta gtgcgacaaa ctgtcggatg cgacgttcga cctttgttca atccgtcaga      360
ctacaccgga aagtactacg gagtggcggt tgaattgcct cccgtcacgg ctcatttaac      420
agcctctgga ctatcgttca acaattcagg cttcatcctt gtgcttgtct ttctacctcg      480
tcattcagtc ccacttggca attagtggac ttatgccttt actgacatgc tacactccct      540
tgggtttccc ctttggataa gtggttgata gtaggttact tcaaagaaac gaacctaatc      600
tatagctaag gagatattta ttgtgctgcc t                                     631

```

(2) INFORMATION FOR SEQ ID NO:241

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 995 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...995

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:241

```

ccggagcattc ttgaagcggt tcgtagcatg gagtgcattg ctgacgttgc cggcatgatg      60
acggaccggc cggctttgag gagaagaggt tggcctccat tcttatttcc gcttcccctt      120
ccaatatctg tacgaaggca tcgaaagtgc tgtgtgttcg ctcaatccct gcccttggtc      180
gaaggagaag agagtatggt gcctacttcg ttcttaagta cttgtttgct gatgattccg      240
ccgtcgaata ctctactgat gccgatatgt cgaggacagt agctttgggg tatgttcttt      300
tgtcattggt tgttttcgat tgttttagtct gatctcatgt ctttaaacgg gcattggcatt      360
acccttattg cgtcggagag agcctatacg agagaggggtg tgccaaacga aaatacttcg      420
tggcacactc tctctttctt gattcggaaa gcctgtatct ccctctcctc agcgttaagga      480
atcagcggga aagcgggggt cgttagaaa catattcgcg aacgaactcc gtggctgccg      540
tatctgtttg tacatgacta catcgtcctc caccttggga gctacctcg cagctcgccg      600
agcatcttct ccaagaacgg agacgtcttg gtcggacgcg gaattcgaag gcttgggccg      660
catcgaggag ttcgatggcg aagatctctc caggttttct atgatcggaa gcagcttctg      720
ttgctgcgtt agctccatag aaaccgtggt cttcctgccc gttgctgctg acgatactat      780
cgctgctgcg gagaacagat acattcttgt tcttgcctac catagctgcg gctcactactg      840
gcggtatcat gaatcccgtc gttcagaccg gggattggct acaggaactc aggcagattg      900
cgcaaccgga gtatgagctg aacctgcna cttcgtgat atgccaggt cagccagggt      960
atagccgaaa atcatatacg tgcaagaagt tggcc                                     995

```

(2) INFORMATION FOR SEQ ID NO:242

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1081 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1081

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:242

```

aatcgggtcaa gtgtgtggct gccaccgtga agaagccgaa gctctgcgat caagtatcta      60
agcaaaaagg cgaaatagcc gtctgttoga tgacttcgct ggtaccgtcc gaagagaaaa      120
agcaaatcgg acaaatgctc aatgagcgaa aaacaaggct caggagcata tcaactccct      180
tcgcgagcgg gcacagcagg ctctgcacaa gcttcggcag aaaccgacct gacacgaaca      240
tcataccgac gagactcggg acacgccatc cgatctccct ggtgaagcag gagactgcga      300
gatctttggc cgctcgggt tcagtatcgc cgacgggccg gagtagagga cgactggcat      360
gtattctctt cgatgaattt cgccgaagac cacctgctcg tgatatgcag gacacattct      420
tcacgagca tcgccccgat gcacccctcg cagcatacgc tccagtgtcc aaagccgggt      480
gatgaaaag cacaaccgcc gattcgcgtc atttgccccg ggcgtacctt ccgaaacgag      540
ctatctccta tcgggcgcat tgttctttc atcagggtga agcactgttg tggacaagga      600
tgttctttc gccgatttgc ggcagggtgt tctttactcg cacaggaaat gttcggagcc      660
gaaacaaaaa tacgccttcg ccttctatt tcccccttac cgaaccgtct gccgagatgg      720
acatctcctg caataatgtg ggggtaaagg ttgcaacttc tgcaagcata cgggatgggt      780
ggaatactcg gatgcggcat ggtggatccc aacgtattgg acaactgcgg catgacagca      840
agaaatacag cggctatgcg ctcggtatgg gtatcgaacg tacaccaatc ttaagtaccg      900
agtcaaagac ctctgcttct tctcgagaa cacctcaact tcttggaaca gttcaagagc      960
gtgcactaac cctctgatca tatcgaatgc gcaaggaaga gcgatacaaa gccgttatcg      1020
attggtttgc gagaatatgc cgggtggcga aacggagctg cggtaccggg atcctttcag      1080
t                                                    1081

```

(2) INFORMATION FOR SEQ ID NO:243

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 626 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...626

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:243

```

cgtgactttc cttttctctc gtaccgtcat caagagctta tagagatagg atgctccgac      60
gtccatgtat gtaccgtacc cggctgtgct tcgaaagaag ggtacgctct ccgccggcag      120
ctatgagggt cgaacgggtt tcggtgggat ggtctttcct tcggcatcga gcaattcgta      180
tgtcagagat agctcgaggc ttccgccacgg cggttgcgta agtcggcttt caggggagaat      240
ataccttgcg gtagctatca tcgagtgtgg atttgatgct gaaatccttc actgcgcctt      300
gggtttgtgca aagaggaata catcgcgcttc gatccactg atggccagaa gtcctgacat      360
tccagatacg agccggtact ccaacgatat acttgagcgt gagcgtgttt tttccggcat      420
ggacataggg attgatgagg attcgccggg attcttgagg tcttcgctgt agcccgcttc      480
gtgtccgttg tatagacata gagtcggac ttggctccgg ctatatggag gtagatatcc      540
gctccatcca gcccggtggg attcttatct cgcgccgata cacacctagg ggttggcttt      600
ccggcagttt gggcggtctg ggattg                                     626

```

(2) INFORMATION FOR SEQ ID NO:244

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 603 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...603

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:244

```

cagcgactgc tcgaatccct ctctcgctgt cggagggacg aagtggagcg cgtggtggcc      60
atgtcgttta cggacttcag ccacgaagcc gtctcttcgc tatcgtgccg ctcccgatga      120
gcagcaccgg atgataacct tttgtctttt tcgctctttg atgcgaagg tcgtcaccga      180
tagacggggg aaatatccca agggcaacac agtcgccacc atcataaaga agagccgcag      240
gtagacgccg tgtcgtgtac gatgtcgtcc accacgagca gcagaaagac gacgcggatc      300
cgaccagcac cgacgccacg gtctgcagca gttcggatat tcgcttttgg ctatgggttt      360
gttgtagtat ccagagaggg cgaagagaga gaccagaaaa gcagatagag gatccccacc      420
cacaggctct tggcggttgaa ggatattcgg acagagtgga gtatatgcgc tcttgccttt      480
ccgtgaggta cgcagcgtat tgtagctcaa ataggaagcc acaattaccc gaagacatcg      540
ccagcagata gcgccaggcg gtgtagcttg catacgtgtc aattggcgat caacctccac      600
ttc                                     603

```

(2) INFORMATION FOR SEQ ID NO:245

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 776 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...776

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:245

aagaactttt	acggctgccg	ggatggcaca	gttatatgtc	agtcgactag	tgagcgtgct	60
tcggggttgc	tcgctatgca	caaagacctg	ccggtcgacc	ggtcgtcagg	ctgatgagcg	120
aaatagattt	gcagttcatc	acgcacctca	gcccgcacctg	tccgaactcg	aagaagcgga	180
ggccgtctgc	cgtatagtgt	gcgctgggta	cagcttcgga	tgaaggangc	ttcggacgaa	240
natactttca	cacggcttgt	gccgtcnagg	ctgtctgccg	tcaccacgga	gcacttttgt	300
cgtcnatgac	cgtgtccaaa	tnaccctgca	ggtggatgct	gacgcgtaca	cttgggcaaa	360
gaagatatgg	cgatagtcga	agcgcgtcgc	atctcggttc	gaataagatc	ataggacgca	420
catgcaatac	gatggaggat	ggcgccgagc	atatgccgaa	ggagccgact	acgtgggtat	480
aggcccgtat	gctatacggg	gacgaagcag	cgtttagctc	ccgtccctcg	actcgaaggt	540
acaaagccat	cgccgcctgt	atgcaagccg	aaggcatccg	actgccggct	ttgccatcgg	600
tgggatatag	gatgcagaca	ttccctcat	tcgcgacgtg	gcataggagg	tattgccgtg	660
agcggcagcc	ttatcaggaa	aataaaaaga	actaatcgga	tgatctccct	tccgtatcga	720
acgatcatct	tttgaaaaca	ggaaaaaatc	taatggaaac	gttacaatt	gccggc	776

(2) INFORMATION FOR SEQ ID NO:246

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 858 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...858

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:246

cctgatactc	ttgctattca	gtgccctcgg	tgtggtcgca	acccgtattc	acactttttc	60
ctccgcttgt	ccaatgccgt	tttgtatggt	caggagcggg	ctttctgggc	cgtatgccac	120
gctatatcag	ttatcggtct	tttgtcttat	cggccgtatc	caaagcacat	tgttgctctc	180
gatctgttgt	ttcctctatt	ggacgacaag	gggcaactca	ccgatttcga	tttgtgggaa	240
agcctttttt	cttggtcttg	ctcttcttcc	tgttctgttt	tgtcttttgg	ctgtgaggat	300
gttttatgcc	ttgtggtgct	atttctttgc	cgatcgtag	actagatgat	ctggagaggg	360
ggttatgcgt	tgctcgaatg	gatgtggggg	atctcctttt	tcccgttgcg	gtcatctatc	420
tttatatgcc	acaattatat	tgctaagcta	cttgttacca	gctattttcg	tgctgtggag	480
attagtgtct	tcgctaaaac	gatacgatcc	ttctcgatca	gggaagtagg	ttttttccac	540

tttctttgta	cctttgtgcc	cacgaaattt	taccgttggg	ttacttgatg	ccttattgga	600
gtggtcggta	aaacaataag	agataatggc	tctatggagt	aaaagtaaag	aagataactca	660
tttcacagcc	acaaccgcta	gcgggtgggc	gccttattac	gatattgctc	agaaacatgg	720
ctgtgaggtc	gtgttcgtcc	tttcatccaa	gtagaagtcc	cgtcagtgcg	agagaatttc	780
gcaacaggaa	agtgaatatt	ctaagaccat	tcggccatca	tcttcactgg	acctaccagc	840
tatcgaccat	ttttcagt					858

(2) INFORMATION FOR SEQ ID NO:247

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 659 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...659

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:247

ctggcagtg	aggaactaag	ccgtgtatgt	gtaccacag	gcgtggttcc	tctgcacaca	60
catctttgtg	cgcagctccc	atctacgaaa	atggaacaaa	gaacaaaaga	tgaagtattt	120
gccgaaactc	tgttctggcg	aatggatggt	gcatttggac	ttaccgaacc	caatgcaggt	180
acggatgctg	ctgctcgcaa	acttttgctg	aagaaaagga	agatcatttc	gtacttaacg	240
gtaacagatt	tttatcacca	atgccgaata	tgtcacgta	tacgtggtat	ttgcatgaca	300
gataagagcc	agggcacacg	tggtatcacc	gctttcatcg	ttgaaaagga	actcccggtt	360
tctctatcgg	aaagaaagag	cttaagatgg	gttcogtggg	tcggctacat	gcgaacttat	420
ttttgaaaac	tgtatcgtcc	caaagagaat	cttctcggtc	gcgtaggcgg	tgggttcaag	480
atcgccatga	aacccttgat	ggcggacgta	tcggtatcgc	atctcaggcc	ctcggtattc	540
acagggagct	atggacgaga	cgggtgaagta	caccaaagag	cgtaaacatt	cggtcgcagc	600
atcgcacaat	ttcagaacac	gcattccaac	tcgtcgattg	caatgccgat	ttcagcatc	659

(2) INFORMATION FOR SEQ ID NO:248

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 662 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...662

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:248

```

cgggggattt ctttgtggag tcgccgatca tcttgctggc ggctattatt ggttcctgaa    60
gatatatgag aacggcaggt attgcacctt tccgcatgca tcgagtttct gaacagacct    120
tatgcgcaga tctttccgat tctgactctt acgatgagct ggccaactat ctttcaccct    180
ttatggacgc atgggaggcg gcgcacagga tcaacttcag ggacagatcg cttcggccaa    240
agaatccgct ttcgaggatg atttctccgg cactttactg ggtaatgacg ggcgtgactt    300
ctcgctcgac atcaataacc cgaaagaacc gaaaatcctg gtgtgggcaa caatcccgac    360
cgacaaaata tctattcggc ggcaactcgt tttacaacag ccgcatcgtg aaactgatca    420
ataaaaaaga gcagctcaaa actcgggtgat tatcgatgag ttgccacca tctacttccg    480
agggctggat acctgattgc tacggctcgt tccaataaag tggcaagtct gtctgggctt    540
caggatttca gtcagcttac ccgcgattac ggagacaagg agagcaagtg attcagaaca    600
cggtgggaaa tgttttcagc ggtcaagtcg taggtgaacg gccagacgt tatcggaacg    662
ct

```

(2) INFORMATION FOR SEQ ID NO:249

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 584 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...584

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:249

```

cggaaaaacg tgggtgcgtaa actttttcgc tttggcgcgga gaagtaaaaa atctcgaacc    60
aaaacgaaaa aattccggca ccaccttctt cagaaaagcg cgccgcaatc agaggatttt    120
cggctcgat cgggtgggata gtggttgagg atattgactc gatagtagag ctgtcctcca    180
acggcagccc taagaaaact cgataaaaaa agcaactattc tcattgccgg acatcgaaga    240
gatcgcaagg acgaaccgaa tgaaaaccaa tgagatctca tcgccctctt cgacaaataa    300
ccgatcggtc catccgccag cagagtcata tccgagtagg caccgatcct gaattgacaa    360
caacgggagc ggaccagcgg ccggagacat gacgaagaga tagacagctc catcgcgacg    420
cccattccgg ccgagaggca ggagtgcagc acttgatccc ttccgttcc tttcacttga    480
agcatagctc attacagccg gggtcattga tgccctcgaa ctgcttggt ctcttccaat    540
aaggccatcg tcggaggaga gagcgaagaa aacgctgtcg gctc

```

(2) INFORMATION FOR SEQ ID NO:250

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 899 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...899
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:250

```

ggcaagtatt gcggcagcca tcgataccac acgtatcgga gttgcagcta aaactgtgcc      60
gataaggagt cgggtgcata taccggagag gtctctgcgc tatggtagcc agtaccggtg      120
ctcggatatgt gattatagga catagcgacg ccgtgcttac tatcatgaaa catccccaat      180
cctgatggag aaggtgagtt ggctttgtcc aatggcttga ccccatTTTT ctgtgttggc      240
gaagtTTTga aaaagcgga agcaggcaag cacttcgagg tagtcgctcg tcagtggaa      300
aagccctgtt tactttggat cagaccgact ttgccaaatt gatcttgctt acgagcctgt      360
gtgggccatc ggtacgggta agacggctac ggagaccaag ctcaagagat gcatgcacat      420
attcgtaaga gtatagccgc taatatggaa aagaggTTgc gaacggttgt tccattctct      480
atggaggcag tgcaatgcag ccaatgccaa agaactcttt agccgtgcgg atgtagatgt      540
gggcttatcg gaggggcttc tctctcggtg gacaaattct tgcttatctc gaagcattct      600
gagattgctt attgtttcac accctttcgg gcgagtttat ttcaaaagga gaaacgaacg      660
agatgaaacc gattttcttt ttagtccta ttgctttcgt tggtttgcca ttcgtcatcg      720
gaagctcagg tttcccatcg gctcatagca aagcccgat cagcatcttc gaagctctca      780
gtgcgagcac gaaggagaag gcatcatcac catctatcag cctgcatccg taagctgccg      840
tgggcaagta tccggacgtt ggccgnttga tcganggcga gacatatccg ttgatccaa      899

```

(2) INFORMATION FOR SEQ ID NO:251

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 395 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...395
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:251

```

catcgccat cacacgagtg atgagcaaag gagcggtagc gctgttgcca acttgaagct      60
atgccttacc gatccttttt ctccgggaat caggccaagt taaaggactg ctctcgacc      120
tgtatttccg gactctctcg agctgtcgca acagaggagt caataggaaa aggaagaaga      180
gcagccctcg aaatgtctga cgatcatacg ccttgtaacta cttgcagagc tatgctattt      240
attctcaacc cctttgatgc gtagcgtaaa ggtaccatcc ttaccattgc tgtaacggct      300
atggctttta cgaactgacc cggacggcgg gcaggattat atggacgtct attttgcttg      360
tctgaccggg agcgatgggc tctttgctaa acggg

```

(2) INFORMATION FOR SEQ ID NO:252

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 618 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...618

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:252

```

ttcgaggata ggtactaagc catgagaaag aatctctttt cccattgga ttgtgtctct 60
acgatgtcgc gaataccctg ctcggtggcc tgcttgatac actacgcac ttggtgccga 120
aaacgtggta tccgacagct tcttcacgag cttgccgagt tcgggaaacg gcttcacgag 180
ctgtacgccg ttggctcgtc ctgaagccct ttgtccactt tcaggaaggg gacgatgtgt 240
ctttttccca aaggaagtct gccgtaggca ttcttcgat cttgccgcgc atggacgttc 300
gaagagaatc acaccgatga tcttgccgt agcgaaagcc ggaaagtaat catccgagta 360
cgcatttggt gaatgagatc gaacatctcc tctcgactg atatgcatcg ggttggtac 420
cgtatgcctt cagagcttta gggctgagcc accactctga tccaatgctc ctacaaagcc 480
gggagcctga gcattctgtg caattgttct ttgttcattg cttgtctatt ttaataagat 540
agcgaaatag cttgtggttt ttcttgnttt cctaaaggta gagattattg tgagagggga 600
cggttcgcac atgaataa 618

```

(2) INFORMATION FOR SEQ ID NO:253

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 578 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...578

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:253

```

cagctgtcat agaactggag caaaagaaga aaagcgatgc cgaagcgcca tcgccacact 60

```


tcgagacagt	ctgaatcagt	tgcaatcgac	caaataaacc	catacacaat	ctcttttagcc	120
aacaatgaaa	cccaacgaag	tacagatcag	ctcgaacgcc	tggtccgcac	accgatcgaa	180
caccccgaca	gtcccaaacg	gcaccgatag	ccatcagtga	tcttttcgtc	caaataagatc	240
cggctcgggg	gaagtacagc	tattcaacga	caaagacgaa	gaacttcato	gtgtgtcata	300
tacgattgga	tccaagaggg	acgaacggag	attccgtccg	caagaggcag	gagcttcgtg	360
ctgcagtcaa	aaggctgcat	gcagcccgat	tctcgacaaa	gaccaatttg	tacgcccctt	420
ctcgggtggt	ctgacacagg	agatttcacg	attatcgagg	aattgctctt	catcgacgac	480
gaactgattc	agctggattc	ggcttctgct	ggaaaatctg	gatgaagaat	tgaataattt	540
cttgccgaac	ttcttcggga	ttatcaaata	atattttac			578

(2) INFORMATION FOR SEQ ID NO:254

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1073 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1073

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:254

cccggtgcttg	tctcctcctt	gctgctatcc	aaatagagga	tggccgaatg	acgaagccga	60
acagactctt	tcgcgactga	agaatcgccc	gcaatttggg	atgaagccga	tgcttatatc	120
gcggaaatcc	aactgttgcg	aggcgacacc	gcgaagcggc	cgaaatagcc	gacagactct	180
tgtcgcgcaa	ttcgccatga	gacagcgacc	tcaactcctg	cgtgtggcag	gcaatgctta	240
ctaccttttg	gcgattcgaa	caaaaccatc	gactatcttt	ccgactacag	cgaaaggtgg	300
gggatcgat	cgcgcctgcc	gatgcttatg	cacttggtgt	cactactata	agcaaggtct	360
gatgaaagaa	gcacttcggc	cacttgccgc	tgtaccactg	acgccggttc	tctcggtgca	420
gagtcggctc	tctatctcgg	aaggcacagc	tggccgaggg	gatgacgagc	gaggccctta	480
tggtctttcg	aaggctgcga	ctcaggacgt	caatcgcccg	gtacgggagg	tcggaatgtc	540
aatatggcta	tgctcatgcg	tagtacggga	cagtcgagct	tcggtcagcc	gtacgcattg	600
cggagaactt	cctcaatgag	tttccccgat	cttcccacgc	gaacagatgg	ctgctattct	660
cgtcgaatca	tatttcaccg	gcaagggttac	aattcttccc	ttagatcgat	ccaaaagatt	720
gcacagccga	cggctccatt	ctggcccgcca	aacagtttgt	gctgaaccgt	atggcagaac	780
aaaagaagca	gcgggctatg	acagtgaagc	actttctttt	gtgtcgagca	gtaatctatg	840
ggaaacaaag	gggaatattt	ccctgaagca	tatttcctcc	gagcaatctg	cggtatagag	900
ccggtgactt	tcgcactgca	gctgcggatt	aagagcctat	atctcggccg	ccggtgatcg	960
tgatgcggcg	aatcttcctt	aggatattat	cgtctgggct	attctctatt	caatgccgaa	1020
cgttacgatt	ggctttggag	gccttccaag	antatgtatc	ccnatccggg	att	1073

(2) INFORMATION FOR SEQ ID NO:255

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1933 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1933

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:255

cggtgaaaa	aaagctgacg	gcttaccgga	gctattotcc	accgatacga	aacgaatcgc	60
tccggactca	tcgatacagca	ggagttctaa	ttcggccgtg	gtaccgatgg	gcggcaagtt	120
tcccaagatc	gttcggcaat	ctttcgtgca	gtcgatcgct	gtcctccgca	ctcggcatag	180
tccatagctc	acgagcaa	tcaggctgtc	tattatggca	tggatgtctt	ccgaacaacc	240
tgcctacgag	ccagttcgtg	caggaaatcc	cgattcatca	ctacctttt	actggcgtat	300
ccagatagcc	ttcggcgagt	ttcactgctt	tgccgagcat	gacccctaccg	ttaccgaacg	360
gacagaaggg	aaggaagcta	cacaactgag	tgctcgccga	cgaaattgcc	atactgcaca	420
aaggcctgtg	gaatgagtgc	cgataggctc	cttttacata	acgctcactc	ttggctccc	480
aattgaggac	atatgattgg	ctcccaaggc	ggtggcaata	cccacttgct	tacggatgga	540
ccaacgaacg	cttcggccc	aaaaagggtt	cacgactccc	gatgttccat	aatagagatg	600
ccgtcccgt	tgccgagtcg	gggattgaat	gtctggggag	agcctctcgg	ccttcgggta	660
cgctaactcg	aatatccaca	cctcccgcgc	atagagtcgg	cgtacctctg	ctgtcatcat	720
tcgtcgaggt	acgagttgat	agccggacct	ccgacctcca	gaccgaggcc	ggggagcgtc	780
actacccac	cccttcaccc	tgccaggaagc	ggacttctc	atgttcggga	ttggcctgat	840
cgtagcgc	accgccatgc	cattgggtcac	atccggatca	tccctgcac	tttcaggact	900
gcggatacga	cagcatcttc	ttctctctga	attccgctat	gggcagactg	actatttgc	960
ccgaaggcaa	ttctacggga	cttcggcgag	agagccaagc	cccatcaatc	ggtacatggc	1020
tgctactacg	cagcggtagc	tgtggtgccg	gtagtgaatc	cgttcgggag	tgaaaagatc	1080
ccggcacgag	gcgtcttacc	gcccgtctca	aaccgacagg	cccgcctcgg	gaatgaatga	1140
aggaggcaaa	ggggggacgt	acgacggcat	atatacgtg	cccatccgtc	gggcagcttc	1200
tatcttttct	cggaagtaac	cgtccctccg	ctttcttttg	tgataatggc	atcggggcga	1260
acggcttgca	tcagtcctcg	tccgcattgc	gttcggaaga	aacgatgcgc	tccgcaggaa	1320
agcgttcttc	tctgcaaaag	caaccgattc	gtctcgcttc	aatatgcggc	aaaggtggtg	1380
cgtcttttcc	agaaagcagc	cagcttgagg	atcgtattca	ccctgtgagc	atcagcagac	1440
gctgcacgcc	atcgccaagc	atccgctcgg	agccgtatcg	tagtttgac	accagacgat	1500
accttcttcg	cgtggaggga	ttgtctctcg	tatcttacta	cggggatacc	tgtttgttca	1560
gaggettcgc	cactgaagcg	tgcaattctt	cggcgaaagg	atgagccggc	gtccacgtca	1620
gtcggatctc	ttctttccga	caaaacgaaa	ccatgtcggc	aaccgtatgg	ctcctgtcag	1680
acgatggccg	tggtactctt	ggatctcttg	cagatgcctt	ttggtgggag	tagaaaaacg	1740
gacttcccgc	ttcatccagc	acgcagctgc	ggcacggc	tcccgtagta	ccgcgaagag	1800
taggatcatg	tgcaagaagg	tgtttgaatt	cgtcggcata	caaaccgtga	caagcccttc	1860
ccaatggcta	tggtctctcc	acgacttcat	cgttgctcag	tcaaggttgg	tccttttacg	1920
aattctggcc	aat					1933

(2) INFORMATION FOR SEQ ID NO:256

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 565 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...565

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:256

```

cggttggtta cgttttctct gcttttaggt tctatcctgt tacaccgca cggatcagta      60
tgtgctcggt tcgccgattt tttccaaggt aatactcttt tccccgacgg acacaaaacg      120
gtgttgcatg ctccggccaa cagtgccata cgccttacat ccgctcgatc agcgtagaag      180
gaaaagaatg gagctgaatt acctgactca cgaacagctt cgctcttctg catccattca      240
atggagatgg acacgaaacc caattataat cgtgggatga aggaaagtga cagacttatt      300
ccttctccac ggagcaacag cgtcgcgcta atcacagtaa ttatgataca tttccccact      360
tcggactatg aatacgaaca aagcatttac gcccgacgat ctatactgat gagcttgctt      420
ggctttttcc tccttggtgt agctctgccc gatgtaaaga tgatgtccag accgacatat      480
ttaagggggc gtggactacg tgaatcctta tatgggcaat atcagtcato tgctcattcc      540
acttttccca ctgtgcattg gccca                                     565

```

(2) INFORMATION FOR SEQ ID NO:257

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 652 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...652

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:257

```

cgcgcgtagc acgtgtggac ggccgctata tcgtcaatcc tactttcgac agctcgaacg      60
cgcagacatc gacttgatgg tcggagccac aatggacaca tcatgatggg cgaaggtgaa      120
atggacgagg tacaggaatc cgaaatgtcg aaggcatacg cgtggcacac gaagccatca      180
aggtacagtg caaggccagc tcgaactatc cgaagctgta ggaaaacttc aaaagcgtga      240
atacaccatg aagtaaacga tgaagacctg cgcaagaaag tgcacgacga atgcatgctc      300
gtgcctatga ggtggctacc agcggaaccg gcaaacacga gcgggccaag cttttgaaaa      360
gatcgtggaa gagtcaaaag ctcaatatac ggagaagaac ttgccgagaa ggccgaaatg      420
atagctcgct actaccacga ttggaaaaag aagcgatgcg tcgtgccatc ctcgacgaag      480
gcaaacgcct gatgggcgta agaccacgga gatccgtccc atatggatcg agaccgactc      540
ctacccggcc cgcattgctc agctatatcc actcgtggtg agacgcagcg cttacgaccg      600
ttacgcttgg tacgaagagc gacgaaaagc tcgtggagat gtactcatta tt                                     652

```

(2) INFORMATION FOR SEQ ID NO:258

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 738 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...738

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:258

ttgttcgttt	gggtgattcc	atgccgaacg	agacgaaggt	caaagtctct	ctcgcgaagc	60
cattccttcc	gatccggcac	tgatcatcta	tacatcggca	cttcoggtag	gagcaagggc	120
gtcctcctcc	tgcacagcaa	tctgatgata	agatgaaagt	ccatagcgag	catatccccg	180
tctatgggccc	gggcgactgt	cgatagcttt	cctgccgatg	agtcataatt	tcgaaaaggc	240
atggaactct	tttgctgac	gacgggaacg	aggattgcca	tcttgagaga	tccgagaaaag	300
tattggaggc	actacctcag	atacgcccat	cgctcatgtg	caagtgccac	gcttttgggg	360
gaaagtgtat	cagggcgtga	atgagaagat	ggctcctctc	cccgcaccc	gaaaggtgtc	420
tacaggcgtg	ctatggccgt	agccaacgct	atcgtctcga	ctattggaat	gaggggaagc	480
gtgcgccact	cttctgagta	tgcaatatgc	cttttacaac	tgcactattt	ttaccctgcc	540
aagcgcgtac	tgggactaca	gcgagggcgt	tatttcccca	cggnccgaca	ccgctatcgg	600
atgagatcaa	catcttcctt	cagtccgtaa	acattccatc	attgtcggat	atggctctgtc	660
cgaaacgact	gccacggtat	ctttcttccg	cagcgaggat	tcaagatcgg	ctncatgggc	720
aaagtgatgc	cgggcgga					738

(2) INFORMATION FOR SEQ ID NO:259

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1274 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1274

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:259

cgcaatgata	ataggttctg	ttataaatgt	cgcattggat	cctctatatt	ctatgctttc	60
ggctgggggtg	tgaaaggtgc	tgcgtagggc	accattcttc	aagaatcatt	acaacaatca	120
tttacacctg	cttctttatg	aaagcagggt	gaaagtctcg	tttgcttctg	tcgtcccaac	180
gataagaatg	tacttgacat	cataaagata	ggtatttcaa	tgctctgttt	gcaactcctc	240

caaacctttc	gattagttta	ttgcagagag	ctgccgtaaa	atatggggca	gaggtgtagc	300
agcagtaggc	atcgttctga	aaattgtaac	attgggaacg	aactggtttt	cggatttgtc	360
aagggactcc	aaccgatggc	tggtataaac	taggggcaga	aaatttccaa	aggttaaaag	420
aggcagtagc	ttgttccttg	aactgacaac	ctcattttgt	gtactttgga	gcactttcat	480
actcgttttt	cttctcctgt	tatcagttgt	ttcggcaaaag	acgaaacaat	gcaagaaatg	540
cacgaattgc	ccttagagcc	aatacgctaa	tgtttttcac	tttcggctcc	agtttggtga	600
ttccacacta	tatatggcaa	tcggaagagc	aagacaggcc	ttttgctcaa	tattggacga	660
cagggactct	tctttattcc	tgtaatgtgc	tgctcccatc	atattgggga	ttgaacggag	720
tgctttatgc	acaacggtag	ccgacgtctt	tgcaactttg	atgacactgt	tctttgccat	780
tcaattcata	gggaaattcg	tcataaatca	catctcacia	cagagaatct	acatgttgaa	840
cataaaagat	atgattatgc	taagacttac	tcaaactgaa	gatttaagac	aataatctct	900
ttatgctcta	caaaaggaca	gatacaaaaa	ggtcagacaa	ctttattctg	aagattattg	960
ccctatgtga	tgcaaaaaga	atttagtctc	attgtttcgg	accctcogtt	atacacgctt	1020
ttgcctgcac	ctttgcaaaag	gggagattca	atggacggag	aggggaaaaa	atgtatcaaa	1080
ctgctctttg	tcattgacac	ggagcttgaa	ttactgaaaa	tgcgaaatcag	ggactttctc	1140
ctgcattgcc	agtcagacct	gctaagaaac	tctgttgaca	ggcaaagcaa	cagattagtt	1200
gaactccttt	atgctctcga	cacttcaaca	gtatcaacaa	ccgagaaaat	agtgtagagg	1260
aactggcaga	cgct					1274

(2) INFORMATION FOR SEQ ID NO:260

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 857 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...857

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:260

cgaagacgga	cagggcgat	gaagcatagg	cgataaaaact	tttcgcaagc	ctgcaaacag	60
ataaggcacg	cactcgattc	gtggtggaat	cgggtgcggc	ctctttttata	taagctcggg	120
aatgggcctt	ttgagccgtc	cgaactaata	taaatcagat	acgatctgta	tacaaatgga	180
aaacgatttg	tatataaacg	aaaacgatct	gtatataaat	cgtttttgat	ctatatacag	240
atcgctttgc	aaagagtttg	aaagcatggg	ccgaactgaa	aaagtctcgt	tttctgcttt	300
tttacttcag	gatctccttc	ctttcagggt	cttatttgga	atgttccaaa	ctcgtcttcg	360
ttgttgaaaa	ctttttcggg	ctgtatttta	ggctttttgc	ccaaaatcat	tctctatcgt	420
accgtcgccc	atagatgctt	ctggcgcgct	cttcctgacg	gatacgaacg	aagaggatag	480
cgagatagac	ggcattccga	cacagaaggt	aatccaagca	ttgcaaagga	gggtgatacg	540
ataagctccg	gaatgacgtt	gaggaaatag	ttgggatggc	gtaccgtctg	aacaggaagc	600
tcgtttcgat	acgatgatcg	ggtacgatat	agagcttagc	gtccacacat	ccctcagctt	660
atagatgacg	aagaagagca	tggcatggca	aaaaccaaga	tcgctacgcc	ccagccggat	720
agcgtattga	actcgtccc	gtggcatacg	cttcgtacag	ggaagtgaag	taataggcta	780
tgtggccagg	gtgaggaaaa	gcgaattgag	cttgccatac	tgtactgcgc	cctgcgttac	840
agtcgcttct	ccgttga					857

(2) INFORMATION FOR SEQ ID NO:261

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 605 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...605
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:261

```

cccgggtgatt atgatgaatt gcttgtttct tcggtggtat cggacaggag gagaggacca      60
ttggattctg ccgatagcga cgacaagatt agaaaaattg ctgacatatt ctattcaaaa      120
gtagtgcccc gatcggtaag gtcgtccaac agctcagtaa cgtcgtccta acagatcggg      180
aaggtcgtcc taacagttgg taacgtcgtc ctaacagctc agtaacgtcg ccctaacggc      240
tcagtaggtc gtcctattcc gatgtgaggg tcatcccttc tgcttatatg ggtttttgtg      300
cttgtaggaa gacatgccgg aggtcgttac cttatcatte gaaaggctcc gtaattttcg      360
agagaggata tgccggagag atctccccgt acgactcgga agcattgatc ttcaccgatg      420
ccgtgccact gacggatact tggtagcttg ggtaatgaaa tcggatgcat cacaaccaac      480
agctccgctg atgagagcgt gaactcctcg ccggagcctt tcagtttgat accggaagcc      540
ccgaagcggt tatatccaat gctctgagac ggccggtgag gtttacagag aagcttcccc      600
acagg

```

(2) INFORMATION FOR SEQ ID NO:262

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1429 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...1429
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:262

```

tccgagggnc atcaatgccg ccacgaataa ttcttgcaaa cccagcttc gaagccaant      60
gctttccgct tgtttcgggc ggntcgcccc gtcagcataa tgggtgcgaat gccatgtcga      120
tgaagctgtg cgagcacttc tgctgccgaa ggttgagtt cgtcgggtca cacagaaacg      180
tccaataat ctttcggcac gtgagaaata gaggatggct gcacccctcg acagagcggt      240
tatatcgtcg gtatctgtgc gccaaagctc tcgacaaagg tctggttgcc cacttgtaga      300

```

tctctccttc	gaaggaaaat	tcgatcccac	gaccggggaa	atttggactt	ccgacagctc	360
ctccgtcctg	ccgtcttcgg	caaaggctcg	gcaatggcag	ctgcaagtgg	atgcgtgcta	420
agaatctcgg	cggagtagag	cgccggcgta	ctttcggtac	atcggtatcc	gatacaaaacc	480
aatcgatacc	gtcacttccg	gcttgccctat	ggtgagcgtg	cctgtcttat	ccaagaccag	540
gcatcgatgg	tagcgaaacg	ctccagtgtc	tcggcattgc	gtacgaggta	ccatttcgtg	600
ccgagcgtcc	gatccctacg	accagagccg	taggcgtgcc	agaccgagtg	cgcacgggca	660
ggcaatcacc	agcaccgata	tggcacgagg	agtccgtaga	ccgaagcatc	ggctgctccc	720
gtcagttgcc	atataatatag	gtaaggatgg	atagcccgat	gactatgggt	acgaatatgc	780
cggcatccgg	tcagccagac	gttggatagg	cgttttgctg	gcctgtgcct	cgcgactgtg	840
cggatgatgc	gcccaggtac	cgtgtcgctg	cctacgtgag	taactgtacg	gtgaggacac	900
cggagccggt	gacgtgccc	gagaaaacca	tgagccgaat	tctttctctc	gcggtaaggg	960
ctcgccactg	atcatgctct	ttgtacggag	ctgctgcctt	cggtcacgat	accgtccacg	1020
ggtatctgcc	gcccggacgt	acgcgaacga	agtgcctgc	gacgagcgca	gcaatgggat	1080
cacggnctct	gcgtccggtg	cgcacgaccc	aatgcctccg	ccggctgagt	cgcatacagt	1140
cacgaatggc	ttgccccgtg	cttcggccgg	cacgctttcc	atgagtttgc	ccagtaggac	1200
aaatgcgatg	atcatggccg	aagcacgaag	tagaggtgga	gcttcacccc	ggccggccct	1260
tcgcggaaaa	acagaggact	atcaggctat	aaaaaaagga	gatagtggtg	ctcaacgata	1320
ccacgtatcc	attgaaaata	cgccgtggcg	cagttgcttg	agtgccgac	ggggaaagtc	1380
cttctgcccc	atgtgtatcc	gggcaaggct	atgagcatca	taggtaggg		1429

(2) INFORMATION FOR SEQ ID NO:263

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1428 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1428

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:263

cgcaatcgga	gtgttttttg	ctcgtaagaa	caaaagcaac	agcttcgcga	tattgattcg	60
atggatcaac	atcgaaactc	catggcttca	tgtcggggat	agcctccatc	tgaaaaaatt	120
gaaactcgcc	ctatatcgaa	tacagattat	aattgctaaa	cgacaaaaat	tgccctctct	180
tttgaccgat	gcctgccctt	actgtttggc	tattatcgag	agaccttgca	aaaggctcat	240
gccacgaaga	ggggaaatat	gaaactactt	gtgattttacg	gattttgtact	atcttgcgga	300
cgtttaattc	ggaatcaaat	actactataa	taaagaatca	agacaatgga	ctctaaaatc	360
caggaactaa	ccgacaaaaat	ttatcgcgaa	gggtcgaaaa	aggcaacgag	caggccgcga	420
aaattatcgc	tgaggctgag	gcaaaagcgc	agagacgatc	aataatgcc	aggctgaagc	480
tgaacgcatt	tgagcgatgc	aaagaagaag	gcgacagaat	ttcagcagaa	taccgaatcg	540
agttgaagct	ttatgctggt	cagatgctgg	agtcgctcaa	gagtaccatg	tggatcaaat	600
ttccggagag	atcgtttcgg	ccaacgtaaa	agcggcacga	ccaaccccca	attcatgcaa	660
cagatgatgc	tcgatatggc	caagaatggg	cttcgggcga	gagcatcatt	atctctacac	720
aaaacgccac	tgactcagt	cctattttcga	aagcaatgcc	aaggacttac	tcaacaataa	780
ggtgcgatca	aagaggtgaa	caaccaaccg	gtggcctata	ctatccagcc	caagatggct	840
catacaagat	agaattcggt	gaggaagagt	tcataaatct	ctcaagagtt	tcttgcgccc	900
caggctggtg	gaaatgcttt	tctaagtc	gccaaatatt	acgccactgt	agccggtctg	960
cccaacatca	ctgtggaaga	cggaaattgc	cgtttacgtc	cttgcaagtt	tctgcaggag	1020
cttaggcctt	cctgagtcga	acggatagca	agctcttcga	tctctgctt	tgggagcaga	1080

gaatcagttc	cttcttcgct	atctggagga	cagcgaaaag	gcccaaggcga	ggagtcccg	1140
ccgactctct	tctcttatga	tacgctggat	ggcatctagc	tgcctatcgg	gagaaacgtg	1200
tcatgccccg	tatggattcg	ttgccgagca	tttccgcact	tttttgtcgg	aaaagctgac	1260
tgagatgttt	cgcgggaaga	agaaggagac	gttggaacaa	tgtccctgtc	ggacactgaa	1320
gccaaagaag	aaaagcacgc	ctgccaatct	ccgacgaaga	tcgtctggcc	attactatta	1380
tgaatatgcc	atgaaatgcg	gcaacgactt	cctggaagaa	tgtttgcc		1428

(2) INFORMATION FOR SEQ ID NO:264

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 455 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...455

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:264

cggtcttttc	ttggcaaggc	ttgccacctc	cacgctgggt	gccatactgt	gctggctata	60
gcagacttct	tcggcggtca	acgctaagg	gattgtgcca	cacctgcaag	tacaatcttg	120
aaaaggactg	cgtacggcaa	tcctgtagga	gtgcttttgc	ctctgtccgg	ctgttcctgc	180
ttggcaacta	atgcctattc	cttatatttg	agggcacaa	aaataataat	cccttacaga	240
ccagaaaaat	agttatggct	aacaagataa	aagttcttct	gacaggagcc	ggcacacgct	300
gggaagagag	attttggctc	aactccttac	gatgcgcaaa	gtctcgagat	ttccgtttng	360
gatatcaagc	gtgggcatac	gatggctttc	ttgaaaagta	taagaaggag	attcatattt	420
tctacgggga	ctgttcgcta	cggataatac	cgtcg			455

(2) INFORMATION FOR SEQ ID NO:265

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 586 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...586

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:265

```

cgctcccttta ccggaaggaa ttctctatgc cggttcgtgg cagaagataa acggaaggcg      60
gacctcctgc accgtacctt tatggcggat gcggggtgag cgacctcaag gctttcgaag      120
tgatttttaag gcatattccc catgatgtgc ttgcatgcg gctaattcca cgcccgtagc      180
ttatctccaa ttattcaaca cgcgcattat gcgggaggag aatggagcaa tcgcggaacc      240
aacggatcga gggggccact tccacggcaa tggggttttc cgaagtatat tccgaaccac      300
ccttttgatt acgggagatc tgagttttat gtacgattcc aatccttggt gatgccttat      360
gtaaacgggc ggatacgggt aatcgtgatg cgaacggagg aggggggata ttccgtttta      420
ttcccgggcc ggattctttg aggaattgga gacctgtttc gagactccgc tcgaagttcc      480
cgtaagggaa tggccggagc ttacggatgg agatatatga aggccgtttc cgccgaagac      540
tggaacgggt gttgccttcg tttttcgcac ccgcgacagg cgttcc                        586

```

(2) INFORMATION FOR SEQ ID NO:266

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 544 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...544

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:266

```

ctgaatgtgt ataaaggaat atatcattga gccatttata tctttcattt ggagtagtaa      60
tgttcctatc attacatgac ggagcataaa ttctttttgt cttgtcttaa tgtatcatta      120
gctacaaagc gataccgtag acttgaaaac tatcagcgaa ctgccaatat tgtttgaacc      180
aagagtgggt attatagtta tagcctcatt tagtaaaaac cacatcattt gatgaatttg      240
caggcaattc ttgactttga caactggtta tataagactg atactatatc attattcgat      300
gtaacagatg atgtccatca tctctctga tgaacccttt tattttctaa gtattgcaac      360
aacattctca tcatatacaa ctggcggtaa aactcattat cattctgggt cttataatca      420
tcaccctggt gtacagttat gatgaaaaca cacttgacat ggcatacata taaagttgat      480
gattgntttt gaatctgcat agattgccaa gtcaaaaata tccataatgt tggatttgta      540
attt                                                                544

```

(2) INFORMATION FOR SEQ ID NO:267

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 795 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...795

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:267

```

agaaaggctg tcggacatat gcctatcggc agctcttttcg ctgtagttcg aggcaagact      60
cgaacttcga cctttggggtt atgagcccaa cgaagctaca ttgctccact ccgcgatcaa      120
ttgtggcaca aaggtaatcc tttttgctaa aaaccaaacc gaaaaagcaa tatagctcca      180
atttctaata gtaaatcaac acaaagagaa aaacaaagac cgattaagaa gtacctctaa      240
ccggtaactc aaaagtttat ttctgtgttg caatgaaata caaacaattg agtcgaggag      300
taaagataca tgattgatcg gctcttgaaa cagggtaccc cccttctttc atcgctcaaa      360
ccattgaggt tgaagagtac cgtctccggc agcgtatcgc atttgaaagt ttatactgta      420
tccttggcct ctttcttctg tatttgggac tctcgacat taattcgtac ttgtttgata      480
accgagtgtg caatcgtttg gtttataagt gtgttaacag ttcaaagtga attgtcctga      540
gccaagtgtg aggaaccag ggctgacgca ttaaaaacag ctttctaata cttttatagn      600
cgtaaagcc ccgttagtta tgtatcattc tctatttaag gcctntgcat gggttccgga      660
ccccggatag agcgtaaaaa aattatctct tgatttttac tgctgaatcg tttcctctta      720
cactcttagg caatactctt ggtatgagat tgaagatatg ccgaggaata cgaagaagaa      780
ttgaaagcta tccaa                                     795

```

(2) INFORMATION FOR SEQ ID NO:268

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 533 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...533

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:268

```

ccccgaaac caattggcat gaacattgaa aatcgacata aaaatcgacc ctgaatacag      60
cgttcattgga gtatttcatt ttcggatact tcttcgatgc tacgatcttg ccacggcgag      120
gtgctacaac ggcacggtcg tcattggaaa ggggctgtgt ctcttaggac aacgaaaaaa      180
gttgatcgta agcagaagag gaaaatggca atgatcatta ccaaatagga tacaatagaa      240
gccccagaaa ataaaacagg cttaagcata tccccgtgaa gagggttgcc atgggtactaa      300
aagtcgggtg ctctctttat gaaccttcat gtcgttctca tcaagttgaa atgaatcctg      360
tgggattgca cggaggaaga gtatgccctt ccccggtgta actaatacaa aagtagcggt      420
ttttctcatc ttcccgagcc gttgattatg ctccggggccc gtgagaatgc tgaaaattct      480
ttaaagatta agcatacgcg acagattggg aaatggaaga ttcgagatgc aaa          533

```

(2) INFORMATION FOR SEQ ID NO:269

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 615 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...615
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:269

```

cggacagctt gcgatattgg aaatgcgagt catgatgaaa ggggtgatcc agaatcctat      60
agggtcgaat tgggagaagt agaaccgggt cttttcctcc gatcggactt tctgtcgta      120
tcgaccgcaa tcgtctttgg gcttcgcccc taatggctat tctgcttcaa tctcatatcc      180
aggagagcag ctcgatagac cgtgctcccc gtctatacgc ctacggatag cagtcgctac      240
cgcttcggga cgaattgccg gtcgctcctg tttgggctgt tcgcagcagc tttggaggga      300
ggatagctcg acgtattgga aaaatgtggt tgtcggtcga gatataccct gcatcagcat      360
gtaccttggc atcgcgcatt ggcttgggga caaagtatcg gatcgggtgag ccgttggcga      420
ttaggcaatg agggattggt ggggctttgg tctattataa ttatgcccgga tcatctttgg      480
ctggggcagt tctgacggct atttaacgata tggttcctcg aatccgttgg gaagataaac      540
ccgncttatt atggtaccca acgacgcaaa agccgttgga cttcttgaag caaactggac      600
tattcttctc cgcaa                                     615

```

(2) INFORMATION FOR SEQ ID NO:270

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 614 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...614
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:270

```

ggatccccgg ccaaatagagc tgtcgcaggc agtacggagg agtaagtcag atattgaagt      60
ccgagatccc ggcgtcgaac aaagccatgt gatacgaacg gcatgcagtt ccagatcaga      120
ctcgccacta cccttggttaa tgaagaagtg ttggggatga gattccctac aagtttgctc      180
atattgtaat tgtcctgata tggtgttagt acttacactg tttcgtctcg caaagatagg      240
attatccgtc tatatccgat gaaggtttat agcacttttc cccttgcgaa tctgggaggg      300

```

```

aagtcctggt tttctttatt cgacatagtg atgagccggt ttgtcgatcc ggcttttaggt 360
gagagggggt ggatatgtat tgaaagcact gtctcccat ggaagaatgt catccgcatt 420
tcattaaaaa tacgtgccaa aaaagtttcc aacaacgaag acgagtttgg aatgattcta 480
aataagcgct aaaaagaacc ggattttgag gtgaaaaaga agagaaaaca ggctccttgg 540
atctgaatct gcttttccgg agtttgatc acgatttata tataaatctt tttgattgta 600
tataaaacga tttc 614

```

(2) INFORMATION FOR SEQ ID NO:271

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 685 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...685

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:271

```

ctggcctata gctttaccga tatggcctgg ttaggccggt tgggtagcag tccgtggcag 60
ccgtaggtat tgtggcggtta ctgacgtggc tctccagtcc atatcgtaa tcaataagac 120
cggcagtgag gtgacgatag gccacagctc ggcaaggggg ccatcgagga agcacgacga 180
tacgcttcgc acaacgttcg atggtcccta ctggatctcc tccgtcagcg ctcttttgtt 240
tttcctttcc cacacctttt cctcggtata taccatttgg aggacgatgt acacctttgg 300
ctcttaccta cctgcgcata gtggcatgcg gcctgccttt cactttgcag ccaccgcatt 360
cagcggatc tacaacggag ccggactcag ctcatacct tcaaggtcag tagcacgggg 420
ttggtactca atatgattct gatcccttgc tgatattcgg tttgggatgg gggacgatcg 480
gagcggccat gccacgctga tcgctcaggt attcgatttc gttotattct tttacaggcc 540
agacggcagg ataagctgtt ggattgcttc ccgttcttcg tccgaccgac aatataccat 600
agcggtcgca tcttgctgat cggcctgcct gtagctgtct caactcctct togccatcat 660
caatatgatg cttggccgct ggctt 685

```

(2) INFORMATION FOR SEQ ID NO:272

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 920 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...920

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:272

```

cccccggttt cggacaaaga agagattgct gctatattttt cccgcacatc ggcttgccgc      60
ttattttcttt cgcacctgga ggagagcgga cggagtatct cctacgaatg tggggggttat      120
ccttttcgggc ggacaggctc cgggtggcac aatgtgatag ccggtctggt cgatgagatg      180
aagctgctca accccgtagc cggtctctcg gatttcttat gggaccggat ggcctgatcg      240
agcatagtat cgcgaactga ctgctgaggt aatagatgaa taccgcaata cgggggcttc      300
gacatgatcg gatccggacg taccaagctg gacaagcccg aacgttcgaa gccggactgg      360
agatattgcg agagttggac atcaaggcat tgtcatcatc ggtggcgacg actccaacac      420
caacgcctgc atcctggccg atactatgcc tcgatcgatg ccggaatata agtgatcggc      480
tgtccgaaga gatcgacggc gacttgaaaa acaaacagat agaaacctcc ttcggttca      540
cacggccgcc aaagtctata gcgaactgat cggatatatc agcgcgatgc aattcggccc      600
ggaagtactg gcacttcacg aagctgatgg ggcgttcgca tctcatatta cactggagtg      660
cgccctccag acccaccaca atatcttata gtatccgaag aggtggaggc caacaattac      720
tatctggacg atgtgtgacc tatatcgccg agaccgtggt gcgtcggtcg gaggcaggaa      780
tgaattcggg accggtactt gattccggag gggttgatcg aattcctgcc ggcattgaag      840
agggtgatca aggagctgaa cgagttctct tccaaatgat gcgaattcaa gcttattcaa      900
acgttcggga cagagaccgc

```

(2) INFORMATION FOR SEQ ID NO:273

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1996 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...1996

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:273

```

caaggaaatc ccattttgct ccaccagtta ttcaggcaaa tgggaattagc cgatctcgaa      60
ttcggattcc tatttttaag cattcacgag attgtcgcgc aggcgaggca tctctccatc      120
taatcggaat ctcatctcta tatagcttct gttggacatt caatatcatc tgcttttttg      180
ctctgcttag caatagaaac gtgacaccgg ttcccaaaca tacgcgctga acgagagcag      240
catagcttct taccttcttt tctcctttta cattgagcct tttggggcgc aaagtaataa      300
taagaaaggt aattccaatc gtctattaaa ttttaattca aaggtaccga ttagtttacg      360
cgccgaaatt ttctcgttta cgacgcctga aaggtggcgc gagatttttt ttgttttggt      420
tcgggaagca aaaaatttac ggcgagaacg aaaaaaatct cgctccacat ttgcaggaaa      480
cacgcacccg aatcgaaagga ttttcggtgc gtattttctga gacagcaggt tattgaccgg      540
acatcgaaagc aatggccaaa ccttatgatt tctatatcgt ttggaaacgt cctacaatca      600
cgtctttacc atacatccaa ggcataccat cttagagtgc cacctgtcta tcccagacac      660
gctctcgttc cgttcttcat tatgcgtttt catttttctga ccatatgatt tccgtggaat      720
atattttcca caggaattgt ttgtatgttt gcaccggaaa aacaaacaaa aacagaaatc      780
aaattgagat acgtaatcgt aggcggagtc gccggaggag ctacagcagc agcagactaa      840
ggagaataga cgaaaaagca gaaatcatct tgttcgagaa agacagaata tatcgtatgc      900

```

caactgcggc	ctgccgtatt	atataggtgg	gtaatcaaa	agagagaaaa	tcttttcgtg	960
cagacacccg	aaaaattcgg	cgactgctga	acttggatgt	tcgggtacag	agtggaggtgc	1020
tgtccatcgt	cgctccgaca	aacagataag	agtgcgcgaa	gccaatggta	gagaatatgt	1080
gagcactatg	acaaattgct	gctttccccc	ggagccttgc	cttttgtcct	ccactgccgg	1140
gggtagatag	cccgggagta	ttcacgctac	gcaacgagag	gatacggatg	ccattaaaaag	1200
ttatttggac	accacacaag	tgaagtgcc	atcgtgggtg	gaggtggatt	tatcggtttg	1260
gaaatggccg	agaactacat	gcccagaggca	ttgctgtcaa	tgtcatcgag	atggctccac	1320
aggaatggca	ccggtggatt	tctcgatggc	aacgatcgtt	catgcccacc	tgaagaaaaa	1380
ggtattggtc	tctatctggg	caaagcgggtg	aaaagtattg	aaaacgggga	gaagtattga	1440
ctgcttcgct	tgactcgggc	gaaaaaatcg	ggccgaactc	atccttctgt	ctatcggagt	1500
gcgtccgaat	acgaagctgc	agctgatgca	cagttggcta	tcggaccggc	acgcggaatc	1560
cgagtgaaga	atacctgcag	acatccgatc	cggacatcta	tgccatcgga	gacgccacga	1620
ataccacac	cctcttaccg	gaaagccgtg	gaccaatttc	ctggcaggcc	ggccaatcgg	1680
caagggcgca	tcgtagcgga	taatatgcat	ggacaacatt	gcggagttat	gaaggagcca	1740
taggaacagc	tattgccaag	atttogatct	cacggttgca	gctacagggt	tgccggcaaa	1800
ggctctcaag	cgcaaggcct	tccttatgag	tcagtgaagg	tacagcccaa	cagccacgcc	1860
ggtattatcc	caatgcctac	ccgcttacgc	ttaaaatcac	cttccaccca	ggagcgggtat	1920
gctctacggt	gctcagtggt	taggcataga	aggcgtggac	agcgaataga	ctccatcgct	1980
caaatacatca	agcgca					1996

(2) INFORMATION FOR SEQ ID NO:274

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1118 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1118

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:274

cggcgacaag	gagcgacagc	ccccttcaac	tctgcaagat	cgaaacagga	tcgatagttt	60
cagcactgac	caaaggacgt	accccgctcat	gaacagcacc	aaaacacccat	cagggacaac	120
ctgcaatcca	ttccgaacag	aggcgaacgt	gtatttccac	ctgcaaccac	tcgatgagag	180
accgaaaagt	catactccgg	cacaattcct	gccaataaagc	atgatgatct	gtgggcaata	240
ccaatcaata	gcatcgacat	gaggggcaaa	gcgattcagc	gtatgcatca	gcacggtaga	300
ccggccaaaa	gcaaaaactg	ttttggccga	tcggccccc	tactagccca	tgaccaccgg	360
ctacgatcag	agcatagcgt	ttttgctcca	tggagtttgg	ccatgagttc	ttcgatctgc	420
ttgtcggcta	ctgtcagttt	ccacgacaga	aaccaatcag	agcaatagcc	tcttcggcca	480
gcttggtcag	tcgtccacat	ccgggctttc	atgttcgatg	acacgaacga	tttcttcgag	540
cgtctcatgg	cctccgtata	agtcttattc	tactcataa	taatggcaaa	ataaggattt	600
gcagaagaaa	ccgtaaacga	atcctccgga	tcaaacttaa	aaacagatga	gaaatactag	660
aagtagccga	atgagtaaaa	aaactcccc	taaggaggga	ggtttcggtt	tttgtgaact	720
caccccaata	aatccaagat	caattccggt	attgcaagac	catcttaacc	tgtctttcgg	780
ccccatattt	cgatctcacc	acaagaaaaa	actaaaaaaa	tatatcatca	cggattaaca	840
taaaagccca	ctatcatgtt	tttaacaaaa	aactattatt	atgtagtaga	caaatacaag	900
acactattat	gattaatata	catacgcgac	tactatcctg	acatttcttg	gatgtgtcct	960
tatgctctca	gccaaagaga	taatgtagat	tcctttttcc	aaatagcggc	cgaccgggact	1020
ctttctgccc	ggaaaagaaa	aaaagggtatg	aggagatggg	caaacagctc	gaactgcaca	1080

acaagtcggt agtgcagccg atgcatattc cttagcca

1118

(2) INFORMATION FOR SEQ ID NO:275

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 548 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...548

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:275

ctgggcaaaa catgacgaaa cgatgagcta ccgtgccgta ccaggtgtgt gtacaccaat	60
cccgaggtcg ccggtgtggg agagacggaa gaatcgctcg caaagcagga cgtgcctaca	120
ctgttcgctg ccttcctatg gccttctcgg tcgatttgta gcagaaaacg aacaaggcaa	180
tggagagtgc aaactatact tgatgaagag aaccgcttga tcggagcaca cctcattggc	240
aatccgccgg cgaactcatc gtaaccgctg ccatggccat cgagaccggc atgaggatcg	300
acaaatcgaa cgaatcatat tccctcatcc gactgtaggc gaatcctaaa agaaactctc	360
gccggagggt gataactctt ctgccctttt ctaggaaatc aaatctaaaa agtccgtgca	420
gtcaacaaaa actgcacgga cttttcctct cttaatatct ttttctcaga gtattcggag	480
taccttcgaa gacagcaccg gaaaaacgag acctttggaa aataaggaga tggaggaaaa	540
gacttaaa	548

(2) INFORMATION FOR SEQ ID NO:276

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 648 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...648

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:276

cggcctcgac cgataatccg ctcatagtca tgcagggcac tatccgcttc tgtagcatca	60
---	----

tcattgattc	ggcatggggc	agaagtacgg	ccacgttcgc	gagtcagttt	gcagatagcg	120
tgctgtcacc	tggtcctgcc	ggcgcgttct	tctacctgtc	cgtacagggg	agccagatca	180
atcagggtaa	ggaaatggta	gaatcccga	gcattctgtc	ttcaacaagt	gctatcgctt	240
gagaagttgt	tgctgtttgt	tgagtgtttt	tgccctaagg	cgaatgacgg	gaggagcgaa	300
tcctgccgta	agatcctgtc	tgtgatgacc	aatgccgtgg	aatctgtccg	atgtgaacga	360
gcagtttggc	caagtctgtac	cctgtcggaa	tacggacgtg	cgctcatagc	cttgatgcag	420
catttcggcc	gctgtggcat	atcctgcata	tccacttgca	acgctgcccc	caaacgataa	480
gctaccgcat	gtgaggatcc	atccgtacga	tcctttggta	gacggcaaaa	gcttcgggag	540
tcgtcccagt	tcgttgagac	ttttggctcg	gaggtgtaga	gcttgctctc	tttgcaagct	600
ggaactgtcc	gccaagccaa	aagccttcgt	ataggcctat	ggtccatg		648

(2) INFORMATION FOR SEQ ID NO:277

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 429 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...429

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:277

gtaaaaaacac	agtatgacga	agcctgaacc	acagacatca	atatcttcaa	ataagaaatg	60
aaaaaagaca	gcgtaatttt	cgatctgac	gaaaaagaca	tcagcgccag	ctcaaaggca	120
tcgagctgat	cgcatcgga	aactttgaag	cgaacaagtt	atgcangcta	tgggtagctg	180
tatgaccaat	aagtatccga	aagttatccc	ggcaaacgct	attacggtgg	ttgtgaagtg	240
gtagacaaag	cgagcaaato	gccatcgacc	gtatcaaaca	actctacgga	gccgatgggc	300
caacgtacag	cctcactccg	gagcacangc	caatatggcc	gttttctggc	ttgcctccga	360
agcaggcgat	acgttcatgg	gactgaacct	cnacacggng	ggcacctatc	gcacggntca	420
ctcgtcaat						429

(2) INFORMATION FOR SEQ ID NO:278

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 650 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...650

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:278

```

cagaaggtgc tcagtatcat gacgaagaat atgcccaggc aggtgctacc tggtagacgg      60
agetaaggcc gtttatgacg gtgccgaagt gatcctcagg taaaagagcc tttgttcaac      120
gaacagctca atacgcacga agtagagtga tgcgcaaagg tcagtatctg atcacattca      180
ttcatccggc ttcaccgtga acccacgaaa tggtagcga tctggccaaa cagggtgtta      240
tctcgtgact ctcgatggtg tcccccgat ctcacgtgca caaaacctcg acgcctgact      300
tcgatgagta cttgtgccgg ctacaaagg atcctgatgg ctgcgaagac ttcgccagct      360
tcatcccgat gatgggtacg gctgtcggta tgttccgccc gccaaagtaa tggatgatcg      420
tgtgggtgtg gctggcttgc agctttggct acggctaagc gtctgggagc catcacttat      480
gctgccgata tcgccctgca gctgccgaac aggcacagag cttgggagcc aaatcgtggt      540
accgaccgtt cctgccgaac tggctatcgc cgaaggcgga tatgccaaaa atggcccgat      600
gatgtactgg ccaaagaacg cgaagccctc aaggcacatt caggatatgg      650

```

(2) INFORMATION FOR SEQ ID NO:279

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 655 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...655

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:279

```

cccctggagt tcttctatga tcattctcgt tggggtaaga tagagggtga ggaactgtctc      60
gcccttctgt caaacgaata cctacttccg tgatacctaa agagtcggta ccctcatatt      120
gtgctttaac tctatcttat aaagaccgaa tagggaaaac gtgcggagat cggcaggcga      180
aaccggtttt gctgctggca accccttttc cgttccactg ttgcggcttg tcggccaaag      240
tcagaccaca ggtccgcaa agatcagacg ctctccactg gaaacctcgt atgcaatgcc      300
aaatcgcgat attcataccg attgtcatgg cggatcagca gctcaaagaa tatgagcgag      360
tatagtccgg tatgaggatt tcgtagtcca gccatcgcgc ttctgccacc ttccatgagg      420
cacctgacga tacagtattc gtcgtcctta cngtatgtgc aagacacaag ccaagcatat      480
ccccaatgca ccagaaaaaa actgattgcg ccttcggact tgctttcgtg ccggcaagcc      540
ccatctccct ttattccttc tttctctttt cctggtcggc tttctgactg gaagtgcctt      600
gaccgcgggt gtctgcggca ctggccacca cacgtctgct tctttcatac gttcgc      655

```

(2) INFORMATION FOR SEQ ID NO:280

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 303 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...303
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:280

```

ggcatatcca tggatgatgaa caaatatccc cacgtacgtg ccgccctttc tggactgagg      60
agatcgctcg tttggctcgt cagcacaatg atgccaaactc ctctcgtgc ctgcacgctt      120
catctcggac gaacaggcca aagctatttg aaaatctatt tggagacgcc ttttgaaggg      180
ggacgccaca aggcccaata gacaaaattc ccatccggaa gtagtactta acccaacaaa      240
aaaccagaaa taaagcaatg aatatcgata attcttccac aacgattcag ggaagaccat      300
cgt                                           303

```

(2) INFORMATION FOR SEQ ID NO:281

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 617 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...617
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:281

```

ccggagagat catcgaagag cgtgaagcga cggcagaaga gatcgaacat tctttggagg      60
ccactccggc tgtggttgcg gttgtagctg cgaaagtgat catcagatgg ttgcaactgt      120
ggcagcgact gtggctgtca ctgatcggac aaagcaataa aacggagaaa agctccaaac      180
cgttgtctct aaaaagaatg gcttggagct ttttaatttc tcagtatctg ctctttgtca      240
gaaacctggc ttgaagttga gaatgtcaca aacacagcta ttataaatca gatgatacaa      300
taggtaagtt attccggctg actacattcg gagaatccca cggaaagcta tcggaggtgt      360
catcgacggc tgtccggcag ggctttttgt agcatggaaa ccatcgagcc gagagttact      420
tcgtcgtcgc ccagggcagt ccattatact tctccccggc aggagagtga catggtacag      480
tttatctccg cctatttcgg ggagaaacca ccggtgtccc tattgctttc atgatagaca      540
ttaaagatgt acgttctgct gactaccgac agtctcagct tcattcttcg tcccggacat      600
gccgactata catattt                                           617

```

(2) INFORMATION FOR SEQ ID NO:282

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 712 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...712

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:282

```

cccgaagagt tgaataagag aatcgtctac ctcggtggag aacgacaact tttcttatgg      60
atcttatgga ggtaagtga gagaccttca aactcaactt gagagttcta ctcttacgag      120
cgatgagaag cactacaccg tggtagtcta tccgatgcta tgattgaacc taagctcctt      180
gagggggtaa aatttgaagc acggagggtga aagactttgc ctggttgctc actcatgtag      240
gaacagcagg ttctacaaca agaagaagaa aagagaggaa cagaacatcg aagagttgaa      300
acggctctaa gtcaccaaca tgaactatac gccagagggt ccggttttac ttcgatacta      360
aagagcaagc aaatcaattc tgtgaggacc tcagaagggt cccaacttcc ataccatcg      420
ctacaatcat gctatcatca tgaaccaaca aaaacaaaaa aataacaaca atcagaatat      480
gaaaacagca cttatatgat ccattgcctt accaatatgc atgtgggtaa gggagatgca      540
cctacgaagt ggtggacaaa tgtgtacagc gagatgtaac cacaggaggc cctgcatcta      600
ctcctccagc ctcaaggagc tttgagacag ttcttttgaa acaaggcttt gccgagctta      660
actattgttt ttgggaagat cagagcgggt tagaaaaata tggcatgaga ag              712

```

(2) INFORMATION FOR SEQ ID NO:283

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1001 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1001

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:283

```

ccgccgttct ccacatagcg gatacgacca ccttcggatt gttgcagggc aaagccaagg      60
aaagccgaat ggtctttacc gtgaggatgc tcggccggac ccgtcttgcc ggcatacctc      120
tatttcccc ggggcgaagt tggctgctga caggttccgc ccgttacggc tctcgccatt      180
ccttctacta tatactcata ttcccgggac tgatgccgct attctgccag ttcgtataag      240

```

```

ctgtacgagg gggatccct gaatggcttt caccacatgc ggacggcgat agcgcccctg      300
ttggcaatga tgacacccag attggctatt tggagcggag tggtaagatt tcgccctgac      360
cgatcgagat ggaaataatg gtggaggaat tcatcgcccc ttataagcct tgtcgtacac      420
cttgtctgtt gggatatagc ccgcctctcc ccgggcagat ccagtccaag cctgtagccg      480
aaccgccagtc gacgatacct ttcttccaat gctcgaatgc ctctgaacg gaaggataga      540
ccgcctgtta tccagcatgg cacggagccc ccagcagaag aaggcattca gctggtggcc      600
aatgccggca ccagactgag tggagagccg tggctgtaca cagccgttct gttgttcagg      660
ggaggggaaac cgtgataaca gctaaagcat ccgtaggcct gatcaccctt tcctgcagaa      720
agatagcccc ttgtgcggct tgaaagtgga gccgggagga taggtggcct gaatggcacg      780
ggcaacaggg gcttgtttcg atcatgttcc atctccagat gatttttccc ccttccttac      840
cggaacagtag cgagggatcg taggaggggtg aagagacgag acgagcactt ccccgctctc      900
cggttcgatc attactatag ctccgcgct tcctgcatca gctgttcgcc cagtgtctga      960
gcttgctgtc atcgaaaggt agatcgcgtc cggaatggcc g                                1001

```

(2) INFORMATION FOR SEQ ID NO:284

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 619 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...619

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:284

```

ctgaaatgga ctatggcggt tgggaaggac ttcaaaggga ggaggtaaag tgcaattccc      60
tgaattatat cggtaaatat gaagaagacc cctttcatat tatccgaaaa ggggagagaa      120
tcctttcgat gtccaagaac gagtcagaga ttttgggaga gagagattct ttactacca      180
agcagcgtea atcaagtgtt atagtgcac ataaaacaac aggtagaata ttattgaata      240
atgttttagag ggaaggaat cctcttttag ggggagacag atggataatg cctcgttgca      300
aagatctctg taaaactagg aattgtagaa gtcgagtatg agataatcga gtatttctct      360
cttaataact gatattttta tggatattca aagatagcga agttcttcga gcagttgcaa      420
aatcaagatt ttgctcaatg gaggattgtt tcggtaaata tgacgttgaa ttttctgatg      480
atacagctga actttttctc agtcatgtga tcatgttggt ttgttcaata acagactcac      540
aaagtcatgt tgctcaaaac atcagattcc atactgtcaa ttggtgggtt caggctcata      600
ataggggggaa gattgaagc                                619

```

(2) INFORMATION FOR SEQ ID NO:285

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 556 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...556

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:285

ccccggcatc	gaccatccga	tagcgatagc	cgggagcaat	cagaatctcg	tcggaaaaat	60
cagcgtttcg	actccttgct	cgtccatcca	atcgagtata	tgccgatggg	ctcactacga	120
gacagggcca	catcttcatt	ctcatagctt	cccactgatt	gacttttaag	gattcttgcg	180
atgtatgcga	agcggagaga	ggcttcttcc	ccagccaata	gagactttcg	agcgtccgta	240
cggagtcgtc	ccaacggcaa	cgatgctgcc	ttgccaatca	cgcagggcct	ccaggatgag	300
cgctcaatga	ctatcagttc	acggtgcac	cgggtgtcac	cgaagtctcg	cttttgacgg	360
gacggaaagt	gccggctccg	acatgcaggg	tacatcgaca	accggagtag	cctgtgctct	420
cagccgttcg	aactcctcct	cgtgaaatgc	aaccggccg	taggtgctgc	caccgaaccc	480
agatttttgg	atagacgggt	tgggtaggtt	tccaagtctt	cctcttcggt	atcccgatta	540
gatagggggg	aattag					556

(2) INFORMATION FOR SEQ ID NO:286

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 515 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...515

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:286

cctctcgcac	ccgtatcaag	acgctaacta	cagataccgt	actggctaaa	gtcgtttttt	60
cgacaacgat	acgaatcagg	ttccgaaacg	tgctctcacg	taggagtagg	aacaattatg	120
gatgcacggg	aagtaatgat	cctcgtgacg	gacatactaa	agcccgtagt	cttcgtgaag	180
ctgtggaagg	tgtagtagcc	aaatgtggac	gatcacagcc	ttgcagctcc	atcgtcagag	240
tatcatgtct	gtgacgaagc	tgctgtgtg	gagctgaaag	tgggcacgta	caacacttta	300
aggatatcga	acgcaacaat	ctataaaact	atgcgctacg	actagctatc	atcggtggag	360
ggcccggccg	gttatacggc	tgccgaacgt	gcgcaaagg	tggcctgaaa	accctcctaa	420
ttgagaagaa	tgctctcggt	gtggtatgcc	tcaacgaagg	atgtataccg	accaagacgc	480
ttactcttac	cggccaaagt	gctacatcaa	attgc			515

(2) INFORMATION FOR SEQ ID NO:287

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 430 base pairs

(B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...430

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:287

cgggcagaat gttcatgacg gccagcatga tggagagaag tgccgcatg cccagaattg	60
aggccagttc caagaggccg ggaaaaggct gccaatgcc cgaagccacc tatctgtcct	120
gccccttctt tggatgaagac gtacttctgt cgcttacgta gctgcgcatg gtgcccatac	180
cttgtgctat tccggcggtg tggtctcgaa tagcgaatat cggatatgat cgatgggtata	240
gatggatcca acggtcggag gctcactccg ataagtccgc cggatatctac cggcgcggtta	300
tagtcagctc ttgcctgctt cgggctatgg acagggttat ggctgcctg catggctgcg	360
aatggctccg atcacatcgc ttgcatcagg cataacttgc catttacggg agtgatactg	420
tcgcccgttt	430

(2) INFORMATION FOR SEQ ID NO:288

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 672 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...672

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:288

cagtaaaatc gtcatacataa aagagaccgc cctgctcag cctcattttg tatattcctt	60
ataacctctt caaggggaaa cctctacctt tacggtcgaa tcaatttcag accgatggat	120
tacgaaatag agaacaacca tgccgacgta ttgcgagggg aagtatcgaa gtgatatgcg	180
gctccatggt cagtggaaaga cggaagagct gctacgccgt ctgcggagag ctaagatagc	240
gcgcccagcg tggagatatt caagccgacc atcgatatac gctacgacga aacgatgtcg	300
tttcgcatga caagaatgct atcgcttcca cccccgtgga caatcggcca atatactgct	360
gctatcctcc caagtggatg tgggtggggat agcgaagccc agttctttga tgaggggtctt	420
gtggaagtag cccagcaatt gccgatcagg gtgttcgcgt tgtgatcgcc ggattggaca	480
tggactttcg cgtcagcctt tcggacctat gccgggcttg tgtgccatag ccgactccgg	540
accaaagttc atgccgtgtg tgtggaatgc ggccgattgg ccagctatat ttccgtcgtg	600

tccaagcgat ccagcaagtg atgctgggcg aactgaagaa tacagtcccc tctgcagaac
ctgttacagg aa

660
672

(2) INFORMATION FOR SEQ ID NO:289

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 946 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...946

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:289

cccgggcgat	tttccggaac	atctgtatcc	tttgagagccg	acgatgacgt	gaaagaaggt	60
gccagagtga	tgttcggttcg	caatgatact	cgccaaccag	acgctactac	aacgggaaaa	120
tagccgtagt	ccactccctt	tctccttctc	ggtggtcgtt	cggactgacg	gcggagagct	180
tatagaggta	gagccaacga	gtggaccaac	gtccgctact	ccgtgaaccc	cgagaccaat	240
gccccgaaca	ggaagtaatc	ggcagcttcc	gcctttttcc	gcttcgagcc	gcttggctat	300
caccgtgcac	aagagccaag	gactgacttt	cgaacacgcc	gcctagatct	ggaaggtgtc	360
ttcgttcccc	gtcaggccta	cgtagccctg	tccgtatgac	gggccctgaa	ggaatgatac	420
tgtctcccc	tcccgatctg	ctgggttgga	aactcccca	gaactggtcg	aatatgcaca	480
gacgaagccc	acgaaaaaga	actccggact	tctttgcagg	aaaacagtct	tatctattga	540
agcagcaatc	cgacgaggct	tttcgactgg	cagaagcttg	ttgaatattg	gcacaaacac	600
agtctcagct	atcgggagga	gagcgagctg	agcagcaaag	ccattacagc	gatagagcag	660
ccgaacaatc	ggccaagata	gatgcgtcac	ggaagtagcc	ggacgttttc	gccggcaact	720
tgcgggcctt	tggggcagtc	tccgcttgga	ttnggtgccg	tcaaagagcg	aatcgacaaa	780
gcggggacta	tttcttgcca	caactttctg	ccatagcagg	cgaactttcc	tcccgatcca	840
agaagtgcga	atgctgaaaa	aagccaaaca	gtttgcgaaa	gactgctcga	gctacaggac	900
aatcttcana	ccgccgtgta	ccgcttgctt	ccttacgagc	cgtttt		946

(2) INFORMATION FOR SEQ ID NO:290

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 984 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...984

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:290

```

aggaaagatt cggacaaagg cggcgggattt cggccttgca atgctccacg ccgtctcgta      60
gctgctcatg gcgtagtggt ggaagagcgg gaggacgaga ggcttcggcc gtgtggcagc      120
tccttcagca catcgccac agccggctgc cgtagcgcgt ggctacatgg acttctctgc      180
ccgtatgtgc cagtgcgggg ctatggcttt cgtatgcgat atgaggggga aagaccgggt      240
gctttgtccc aaacgggtccg atatttttgt gccgaacttt tctttctgaa aggatgatga      300
tacctctcac gagtaactgt ctcaggagaa aaggcaagggt gatatcctcc tgtcggtcag      360
aaaagaattg aggtagcgcg ccacgtcctt ctctcagggc tgtccggcga gccgatattc      420
agcagcaata ccacctctct ccaccttat tgtcatcggt tcttctacga tctgccataa      480
tttcaggacg agataggtaa gattccgttc gtgtctctta tttttccga tccattctt      540
aaatgaatga gagcattaac ggagtaagga agccgtattt gccgaagccg gatgtgcaac      600
gaataaaggg atcgactctg cggcaaaagg attcgacaaa aggccgtgcg acagtttcac      660
tctctgcaag ggatatacgg gtacttcggc aaaagaggga atgtccgaca ggaaatctgc      720
attgcggggc gaaaaagtcg ctccaagccg gaggaagcat tttccgcgcg gatttgtcgt      780
cctcaagttg gagcagtgaa tttcgtgtcc gatttgcagg tttgcacgcc gaaaatgaca      840
ttttcccgac cgaaaagccg tggagacccc cggatttttg agggttggaa gggtcggctg      900
tgggtattcc tgtgattttt tactcccgat gtatggttcc actcccgcg acacgctgaa      960
aatcatcggc tcaaaaaccg tctg                                     984

```

(2) INFORMATION FOR SEQ ID NO:291

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 878 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...878

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:291

```

gacgtgtaac gttcgccgat cgagccgtca ttttacttcc aaaacgggca tgaggctttc      60
ataaatatca gccggtgtct tggcatagag aaagacggat atctgttctc agtctcgtaa      120
tgattgccct cggtcagggc tgtctgatga gcagattgtc atcctccgtt tgaagaatgt      180
agaggtaatt gaagtaccct gtttcatcat gagggtagca gtgtacatct gctccgaagc      240
atcatgaaaa gctcgcgttc gtcacatcgg agaaaatcga aagcctctcc ggacaaagga      300
ccggcccccg caacttttca ctctcgaaag agaagataac ctctaatagt ctccttcggt      360
agcaactatta gcaccatcgg tagtacgaat gaacgtctac cgaaattggt ttgttcgaac      420
tgatagggta atccggctct gttttgtcgg gatacaactc catcacatag tgcccgttgc      480
gcgagtaaga cggtagaccc ccataccatt gtaactatcg ctgagcatct ctgccttcgg      540
taaacattgg ttgccggaaa taaagctccg gcatgctgat catatacatg gtattacctg      600
caatactcga aggtccggag agcgaacgca tctcggatcg cgcccgtttt gtcccacgac      660
aagggtgaag tcctccgagg gggacagatc cgtaagccct tcagatctac ctcaacattg      720
acttgctgat gacgacgtgt atatcttcat aagtaaccga cgtttgcaaa cccttgaggg      780
aagcaacgga actaccacac gaaaggcgat cgtaagaagc gtttcgtncg gatataaacg      840

```


tcgaatacgg tcatgagata attccccgag agcnttgg

878

(2) INFORMATION FOR SEQ ID NO:292

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 581 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...581

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:292

gcagtgcctt	ttcccatgag	tacttcttcg	aatgctcgga	gaatcagggg	cgatccagag	60
aatcgccccg	catcgcgccg	gtatagtcac	tgaaattttt	gctccgctta	taccgaaagc	120
gtatgccaca	gagtcagcag	aagtcacata	ggcttcacgg	tttgcaacctc	atcctttttg	180
ggcgggtttt	ttgcaaggca	gataatccgg	ccactaaaaa	ggctaagccg	gcaatgatca	240
ttacttcttc	atagtattt	gtcttctgat	tatttggtga	tactcaataa	ttcgttataa	300
aaatgagcgt	actaccgggt	ttgatattgt	cgccggcacc	acgtctccat	acgccagatc	360
gctcgggtata	gttactttcc	acttggatcc	taaggcatta	attgaagaat	ctccgtccag	420
ccggctataa	ctcctcttag	aggaaactgg	ccggttctcc	cctgtccata	gagctatcga	480
aaacgatacc	ttgatgagcg	taccgtgata	atgacagggt	accgtgtccg	aaagggtggt	540
ttcgggccct	ctcccatctt	aatgacttcg	tattgcaagc	c		581

(2) INFORMATION FOR SEQ ID NO:293

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 766 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...766

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:293

gcgctatagc	cgtctttctc	caaagtcttt	acttgcgtaa	ccacacaaga	ccaacttcga	60
------------	------------	------------	------------	------------	------------	----

taacagtgca	tggcagattc	ttgccctcgg	cactgaatcg	gatgtcattc	cgattttctt	120
tcctaataaaa	cctggcattt	cagttttatt	aaacgtttct	caaactttga	tttccacttc	180
cacaccgctg	gggagtccaa	tttcatcaga	gcacccacag	tcttggcagt	agagttgtaa	240
atatcatcaa	tctcttgat	gaagagagtt	cgaactgctc	acggctcttc	ttgttacgaa	300
cgtagagcgg	ttcactgtga	aaatccgctt	atgcgtgggc	agagtatagg	accgctaacc	360
atcgaccggg	ctgctttcac	cgtcttttacg	atttctcggc	agacttgccc	accagcatat	420
aatcgtaaga	cttcagctta	atctaattctt	ttggctcata	tctatgttgt	tcttttattt	480
gatcaaatca	cgcgaccctg	agcttcggta	agcacctgct	tagcgatggg	agagggcact	540
ctgaatagtg	agagaaggtc	atcgctactcg	tagcacgacc	gctcgttacg	tacggagagc	600
cgtcacatag	ccgaacatct	cagccagagg	caccttacct	ttacgatacg	tgctccggta	660
cggctgcttt	ccataccttc	cacctgcccg	cgacgcttg	tcaagtcgcc	gatcacatca	720
cccatactct	ctttcgagtc	accacttcca	gtttcataat	aggctt		766

(2) INFORMATION FOR SEQ ID NO:294

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1781 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1781

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:294

gccccattgc	cttgccaagt	tgtaggggtg	tattgccgag	catcttgccg	agaaagcaca	60
gaggtagcng	ncagaggaga	agagattctt	ttccgctatg	ccttgagaga	cagagacgga	120
tcggccaagt	ctgtgtagac	atgcttgccc	tttcttcattg	catccatttg	agtggcggac	180
aactgaattc	ctgattaagt	gacgtttgaa	agaactgagc	gacagattca	ttttggctgc	240
aagctttctg	ccgatcggca	ctccaaatgg	tgtcgggaata	cgaagcacg	aaagccttgt	300
tctgacagtg	gaatgaggag	agaaagtgtg	ctaaaagcgg	ctttcgtagc	gtgagcggaa	360
gatgcagaag	agttcgcgca	gtttcagctc	gatattctcg	acgaagtggg	catttctgac	420
aaatatccca	tcacagagtg	ggccaggagt	tcaccattgt	ctctcgttgc	aaggaggaga	480
tgtgaacgat	tcggttcgtc	tccggcattc	tttcttattg	cccgaagagg	gacaaatgog	540
aggcataaat	ggagcgtggg	atggaaataa	aagcaaatga	gcgtagccgg	cctttttcag	600
ctctaagtct	tatacgaaga	ttggcagcca	aaaggacaca	ttatctcccg	acaattgcga	660
attaccggat	tccggcccga	caaataggcc	ggctctcctt	tgagcaggaa	gagcaaagca	720
tggtgtgtct	tggtcagatt	tccaaatcag	ctccttgccc	taccgtgtgg	agttcgggca	780
atccgacaga	gcagtggctg	gtcggctgtt	gttcaggatg	ccattcggat	ttttttggga	840
gagacaggct	gacagatatg	aatactcata	aggaggatgg	tcggcggtat	ctttggcaaa	900
gcgagctatt	atgtgacgag	ctgccttgtc	caggatattgt	ccgtaccgat	gcttttgccg	960
atggagtcgt	atccggacaa	tgtgcttgct	gctctgcgga	cgaagcatca	aggagcggag	1020
acaaacttgg	gccaaacctt	tctccgtgaa	caaggctccg	aaaagttcgg	gcactacacc	1080
ctgcccggca	tgaggtttgt	cagcgaaata	aaaggcgtac	caaagcatac	ttgaaaatca	1140
gattggtcag	tcgaacntcn	tcgaatatag	tagcatcgga	cctgtggcgt	accgatcagt	1200
gcgggtttcga	gcgtagccgt	tcctgagtta	cgagggtgc	tttgctctct	cggagtattt	1260
catacgtgcg	tccgatacaa	cgggaatgct	gtcgtcgggc	aaaaatggag	tatagtcctg	1320
tatgtcagtc	cgggtgcacc	ggctatgaca	gggcggtagt	ccgggaattg	ctcatcacac	1380
gcagcatcac	aggcaaatc	tccttcactt	cgagcaagcg	attccacaga	gaagggctac	1440
ttgacgagaa	tctttggctg	accgctcttg	tcttcgatcg	taggccgcac	gtgttgcttg	1500

acggcatcat agcaaggatg cctacataga tgacaggaaa atcgtgtccg gcaaaaaaat	1560
ctttctcgaa ggcaagatgc agagcatgag atcgacgtat ttcttcaacg tcttgatcgc	1620
caggatttcc atgccagac cttaggagag atataataga ctatcgcttg ccaagctctt	1680
cgcgtacaaa cggaagtacg tagcgcatat tgaagccggg tagtccactg cgatgacaac	1740
gtcggggtta aatgctcgca tctgtcctgc acatgttccg c	1781

(2) INFORMATION FOR SEQ ID NO:295

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 409 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...409

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:295

aagaccacga tgaacgacat cgccgatgcg gcaacaagg gacgacgcag ctatatactt	60
acttcaaaaag caaaaaagat atctattttg ccgttgatcat aaggagctgg acgaactcta	120
cagctcggttg gagactgctg ctctcggttct atgccgccga ctaagaagct gatgcacttc	180
atctatacgc atttgagca atcaaagaga ttgtcgtgcg caatggtacg cttcgtgccg	240
attttttcgt gatatatgga aggtggagac tgctcgtaag gagttcgacc tcaagaagaa	300
catctgatct gttccatttt ggacgaagggt gttcggtta atggttttct ataccgata	360
cccatattac cgccaagatc ttactccact catcaagggg ctggaagtg	409

(2) INFORMATION FOR SEQ ID NO:296

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 669 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...669

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:296

gaccggattg	gtcgcagccg	tctgtgccgg	caaaacgaat	tcgacgaactt	tgaggcggct	60
gtcctgctgg	aaatgatcca	tacggcaacg	ctgatccaga	tgacgtcatc	gatatggctt	120
ctacgcgtcg	gggagtagccg	accctcatgc	ttttttcgac	aatcgtgtgg	ccgttttgat	180
gggggaacttc	gtgctccttc	cgctttgatg	cgtgccatcg	ctctgaatga	tattcgcac	240
atcacattat	atcccggtcg	ggacgtgagc	tgctggagg	tgagatcagg	cagtcgagac	300
agccgacaaa	gtgataatag	acgaagacat	ttatatgggg	gtgtccgaca	gaaaacagcc	360
atgctcttta	gtgcttgtgc	agaggctcgt	gcattaccgt	tcaggctcca	gtagagattg	420
tggaaaggg	gaagagggtg	ggaagttgct	cggctatgct	ttccagatca	gagacgacat	480
attcgattac	atcggaatga	cgtaggcaaa	cctacgggca	atgatatacg	ggaaggga	540
ttacactgcc	tctgctgttc	gctctcaaga	acgagcagtc	tgcgcttcag	atcattgctc	600
accattctgg	acaaaaaagc	tttctcgga	gaagattcag	cttcttacct	ccttgccata	660
gagcatggg						669

(2) INFORMATION FOR SEQ ID NO:297

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 592 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...592

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:297

ccagacaaat	caacagaaag	agaatctcgg	acaggcatag	agagcctaca	ccttgagaac	60
gaatttgaaa	ttgatgtgct	gcaacatata	gccgtgcctc	cgaaaagaga	ggtagccga	120
agaagtcttt	caggatatcc	agtgggtgatt	cagacagaat	accactacat	ggtagcggg	180
ttcgatcacc	gtatcgcatg	gatcatttgc	gggacaccgt	tgcgccaccat	gccgccgaag	240
gtaatccctc	cggaatgttc	agatctttca	ccggctctttt	ggtgacgggt	gctcgcgatg	300
agccacgagt	tcggccacat	cggcattggc	cagcgtcagg	cactcaccgt	actcgatatc	360
tcgccgagga	atatgcggta	gatggagccg	gcgccaaaag	ttttttgttg	atgagcgtgc	420
ctatatcaag	gcggtcagcc	atgaaatgta	gtctatatcc	tcttccttgg	cgatgggtctt	480
gaatacaccg	aacgcttggc	tcccaagcag	gcgaggacat	tcgtctccga	attttccgta	540
gagcgatgaa	tacatcggtc	tgatccaacc	cggcttctat	tgaagatgcc	ga	592

(2) INFORMATION FOR SEQ ID NO:298

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 529 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...529

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:298

```

ggcgaaagaa acaccgcagg acgataagga agctttcctc ttcaacgtac ggttccgcgc      60
gtactctctg tcttggaac tcgcaacccc agtggttagt accgggtatc aacaacatcc      120
tcgaaggcgg ctatgtaaag gccgatgcac taccgctatt ccggtggata gtatgatgca      180
gcgcggacgc agagcgatcat ggctcttgac cgactacagc aaggccaaac aagccggcga      240
catggagctg ccctacagca caaatccgtt atagacgaga atttccccta ttctgctata      300
gctatatcca gcacaagaac gacatagttc ccccggttgg gctacctact acagcttccg      360
tatcatgggt ggactcggtg tgctgttcat ccgttatccc tcatggcatg gctcctgagc      420
ttcaaaccgg aaaaattcag caaatgcgat ggttccacat gatcgctatc gtatgtatgc      480
ctcttgcatg gtagccagtc agagtggctg gatcgtagcc gaaagtgga      529

```

(2) INFORMATION FOR SEQ ID NO:299

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1147 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1147

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:299

```

gaactaaagg gcggatttaa cgtagccctt agggctcggac tgagttgcta ttgagagaca      60
atttcgccgt ctttatcgat accgggacat ccgacatctg cgcggcggcc ttgcattgat      120
gtggtagcag aagcagcgta ggatttacgg aagggtatgaa gcctctactg acggtcgttt      180
gtgctattat tctccttccct tgccctctcg tgggcagacg gtggtgcccg aatgggatga      240
atacaagcag agcagataga atcagggtgca ctcggggagg acgagggagc cgaattcttg      300
aacggtggat ggtgcagaag cagcatccgc tggacatcaa taccttacct gggaggactt      360
ggagcaattc ccctttctca atgagtttca gaccgcccgt tctgtctcta ccgacatgct      420
catcccaggg ggttcgacag ctttggggtg tgagttagat tgccggctgg gacagacgta      480
cctgtctgct ttgtggccga tgctgacggg gcagaagcgg agcagagtcg ctgccgcctt      540
tttcgcgaga tctgtcttta tgcccgtcac gatgtatcgg tgcataccat gccatcctcc      600
agcagcagga gggctaccgt ccggatagcc ggcatectat cggggcgatc cgtgggggtg      660
cggtttgccg tggagctacg ctatggcaat cgtttttccct taggccttac tgcgtccaaa      720
gaccggggag aaccgccttc gataagcggc gaaagggtct cgacagotat tccgcccact      780
tcttatggaa ggggaagggg ctgtgcgagc cgtggcactc ggagactatc gaaagggatg      840
ggatacggcc tgctcgtaaa tcaggcctct tcatgggaa tgccctacgc tatcctcgtg      900
gcggaaccac gctgcgacgt gcgtttacct agccaggac aacttcgatg gcggggccgc      960
taccgtctct gcacaaggac atgggcaact acggcatttt attcgcgcca ggggatcgac      1020
gccaccgtcc cgaagacggg gccatcaaa ccatttacca caccgggctg catcgtacga      1080

```

tccgagatcg cgcggcgaaa cgctgccacg atgacaccga agcacttcgt ctgctatacg 1140
acgatcg 1147

(2) INFORMATION FOR SEQ ID NO:300

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 226 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...226

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:300

gtgtcttgggt gtatttcttg ttcagcagtg tgcgaatacc acgccaatca aaccggcatt 60
gatttgacgc aggaaagagt gtttcatgcg atctctgcaa cctgagtgtg gacttgacag 120
tttgtttgggt agccatattt atgctctgtt tatacgtgta aaatactaaa tattattgat 180
atacgcaagc aatgcagcaa atatgtcgca aaaatgccgt gcaatg 226

(2) INFORMATION FOR SEQ ID NO:301

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 863 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...863

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:301

aacgacacga acatcaggtg acaccttggg tgcaggcttt ccgcaacgct acgagtggat 60
agccaagcag gtgaaaaatg gatgatcgtc gcccccaatg acagaggagc aactgctttt 120
ccgcatcgca ctcacgcatg taaaagggtg ggtagcgtgc tggcaaggca gctgctttcg 180
gctatgggca gtcccagacc atcttttccg acaggaagga gctgggtacag aggctaccga 240
aagcactcgc cgccctcgcg atgcatctt ctctccttcg gtcattggagg aagccgccga 300
aagttggatc aagccctcaa agccggtctg aatatgtatt tcacaccgat gataactatc 360

cttaccgctt	gaaagaatgt	gtcgacgccc	cctccttctt	tattccaaag	gcaatgtcga	420
tctctcgcca	cgtagggtgc	tagcattgta	gtacngcgca	atatcacggg	ctacggacgg	480
tcagccacgg	gcgaatcgta	tcgggattgg	ctgaaaccat	ccccgatttg	cttatcgctg	540
cggactggcg	tacggcgctg	atgtcgcagc	tcataaggcc	gctttggaaa	tggcttgccc	600
actgtagctg	tattggccca	tggattggac	aggattttcc	gagcggtcac	cgttccattg	660
ctatggagat	gctccgaaac	ggaggtgct	cacggattac	cctatgggga	ctgaaccgga	720
ncgattcaat	ttcgtggctg	caatcgcatc	gtagcaggct	tgtcggacgc	cacacttggt	780
atcgatcggc	cgaaaaagga	agctccctca	tcactgccgg	actggcattc	ggcacaatcg	840
cgaagtact	ggctcctacc	cgg				863

(2) INFORMATION FOR SEQ ID NO:302

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 857 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...857

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:302

gacttgagat	ccgggcgaaa	gagcgaagag	gaattccgaa	ccgagctatc	cgatacatag	60
gaaaaagaatt	gacctatcag	cagggtgtacg	atgctctctt	ggttttcttg	aggagatttc	120
ggccgaaaag	ttcgattata	tcgactccta	cgccccgatt	atcgactctt	cctcctctcc	180
aacaccaatc	cttatgcctc	gatttggcca	tgagtcgcg	ttttcttccc	tcaggaagga	240
cgctgatagt	ttctttgata	aagtctatgc	cagttgtcag	atggggaaat	acaacccaat	300
gaagatattt	tcctcgaaat	gatagccgac	agcggtatga	agcggaggaa	accctcttca	360
tcgacgacgg	accggctaatt	gtggcaacag	ccaacgactc	ggtttccaca	cctattgccc	420
cgacaatggg	gaaaactgga	tcctgccatt	actcgactcc	ttcgcgaaaca	gaaataaaga	480
agggtgtac	gcgaatcggt	tcgctccgta	caagccccct	tttcgtatcg	aaagaacggt	540
gcttatttcg	taggtctctg	catcgtgaag	tccacgttca	gcttattcga	tccagtcogt	600
accagttgcc	tgtaatatga	tcgatagcca	cgggaataga	ccaccgagta	catcgaatac	660
caccacacttg	gcttccacac	ggttgtgatt	atacgtatga	tgggctgttt	acccggaata	720
cgaaattcca	cgggtaggat	ttgtcagcct	tgagcgagag	ttgcaagggc	gtttgtccca	780
tctttcacca	ttgatgtaaa	cttctgctcc	ctgtgggttg	gaaaccattt	ccaagcatgc	840
gtctgtttgc	cgaaaag					857

(2) INFORMATION FOR SEQ ID NO:303

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 427 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...427

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:303

ggattcaaag	tgtccaagcg	cggggcatcc	attcatacgg	gaatagactc	ctgcacaaca	60
aacccgatgt	gagggaggtg	ttggatagct	ataagcgggt	acgctgcatg	ccagatatag	120
cgatcagttg	aattacgggg	atatgatgtg	gacttgggta	tcgggctgat	gcagaccttt	180
tccattcaag	acagcaatcg	gatcagctcg	tcaatgagta	tgaagagacc	tacaactcca	240
agtattgcgt	tcttctcttt	ccttcgatgc	caaagtccgc	ttttcgggta	gttgctcaat	300
agtatagact	ggcttctctc	tgccgactat	acttccgata	tgccaaaagg	aagaaatact	360
acattcagta	cgagtggggc	cgaagagtat	gccgtagcta	cccgaagcg	gagaacatga	420
aggtggtt						427

(2) INFORMATION FOR SEQ ID NO:304

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 596 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...596

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:304

gccgaattac	cctcgggtgat	gaaaatgctg	gtacgctccg	gttccttgcg	ttgggatcgt	60
tgaggtggac	ggtgcagtca	cgcagttttt	tggtgtgcga	ttggatttct	tagctogttc	120
gcgtgccaat	ttggtgatgc	cgcctcatgct	ttgcgctcgc	gttcgctctg	ctggatcttg	180
cgcagcatct	cctccgcggt	tcggtatgga	tatgcagata	gtcgtccagt	tctttcttca	240
ggaagcggcc	acgaattttt	gtatcgtagg	cccatccggc	cccatgtcac	ggctccgagt	300
ttggtcttgg	tctgactctc	gaagacaggc	tcttccactt	tgaactgata	gctgcggcca	360
tgccgctacg	aatgtcgctg	tattcgaaat	tctggagtag	aactctttga	tcgtacgggc	420
tacggcctca	cggaaagcac	tagatgcgtc	cccccttggtg	tcgtattctg	accgttcaca	480
aagcttgtag	actcatcgcg	tactgctgcg	tatgggtgac	gacatctcat	atccgtatcc	540
tcagtgatga	tcgatacagt	gcattgcccc	tcatatctct	cagccaaaagg	cttcca	596

(2) INFORMATION FOR SEQ ID NO:305

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 377 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
(iii) HYPOTHETICAL: NO
(iv) ANTI-SENSE: UNKNOWN
(vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
(ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...377

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:305

gtcagatttt	tttctttata	aaatccctga	cagatgttta	cgtattttata	atgatatgga	60
gaccgtggta	gcaaagatta	tttttgagtg	aggtaaagtg	gtttcgtcta	tgtgcgggtc	120
aattccggac	agtggaggtt	gcattattct	atcgcgatta	tcaaggcagc	gtgacggata	180
ttaccgatgc	ctccggacgg	tggtacaccg	catgcgatac	agcccatggg	gaaaattact	240
gcataggatg	gtacacctta	taccgaagc	gaagagttat	ccaccgacta	tgacggcttc	300
tcttccttgg	acgggggttat	acagggcacg	agtatcttcc	ctgtttggat	tggtcaatat	360
gaatgcccg	ccgtcca					377

(2) INFORMATION FOR SEQ ID NO:306

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 711 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
(ii) MOLECULE TYPE: DNA (genomic)
(iii) HYPOTHETICAL: NO
(iv) ANTI-SENSE: UNKNOWN
(vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
(ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...711

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:306

taggcaattc	gcccatcagc	agtaccatcg	aggaagaggt	ggaaaaggcg	tctggggccat	60
acgctggggg	gccgatacgg	tcatggatct	ctccacgggg	atcatatcca	tgagacgcgc	120
gagtggatca	tccgcaattc	gcccggtcca	tcggcactgt	gcccctctac	cagacgctgg	180
agaaggtgca	ggcgagtgga	cgaagctcaa	ctgggagata	ttccgcgata	cgctcatcga	240
gcaggcgagc	agggtgtgga	ctacttcacc	atccacgcgg	gtctgcgttg	gcacacgtgc	300
ctctgacctt	gcgcgcctc	acgggggatcg	tctcccgcgg	tggtccatca	tcgccaaactg	360
gtgcaccacc	cacaagcgcg	aaagtttcat	ctcgagcatt	tcgaagagat	ctgccaaatc	420
ctcgcacgct	acgacgtagc	ctatctctcg	gcgatggctt	gcgcccgggc	tgcatccacg	480
acgccaacga	gctgcgcaga	tagctgagct	gaagacgctg	ggcgaactta	ccgagatcgt	540
tggaagtata	acgtgcaaac	cattatcgaa	ggaccgggac	acgtgccttg	cacaagatcc	600
gcgagaatat	ggagattcaa	ctngaagcct	gccatgggca	cccttctaca	ctctcgggccc	660
gttggtcagc	gacgtggcgt	ccggctcgac	catatcacat	cggctatcgg	c	711

(2) INFORMATION FOR SEQ ID NO:307

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 381 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...381

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:307

ttcgccaca	tcgtgcctt	cggggatcac	cgtgatctgg	tcacaccggc	tgacaggaaa	60
ggctccttct	cgcagagctt	cttacccggc	agcacattcc	atcgatcaca	cgctcgtgag	120
attcctttat	tgctcagtcgg	ccggggagga	agcaaagaca	ttgcaaccgg	gcataatacg	180
gacgtatccg	tgagctcagc	gtctgagccg	gtcatggcaa	tcattctggt	aaaatcggct	240
ttgccgtaag	caggaaacgt	ccgatcacga	tcaggtcggt	agccttgagc	gtcccaccgt	300
ttcgccccga	ttgattggct	tcggtatgat	tgatcagcac	gccactttta	cctgccggat	360
gaagtcctcg	gttacttctc	a				381

(2) INFORMATION FOR SEQ ID NO:308

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 677 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...677

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:308

gaccgatcgg	atttcatctg	gctggcttcc	gatgaggatc	gcgaaggagg	gccatcgcac	60
ggcatttcta	cgaagcatta	gggctgaaaa	acaaacagcc	aagcgaattg	tatttcacga	120
aatcaccgag	acagccatca	gagctgcac	gaaaatccac	gagatataga	catcaatctg	180
gtcgatgcc	aacagggagg	cgcgtcctcg	accgtatcgt	cggttcgaa	ctttctcccg	240
ttttaggaga	cgtattcgtc	cttctctttc	ggcagggcgt	gtacagtcgg	ttgcctgcgt	300

cttatcggtg agagagagcg tgagataaat gctttcgtgc cggagcatcc ttccgctgta	360
cgatagagtt cgtccttccc gacggtagaa tgtgacggcg gaattgcaga aacgattcaa	420
gacgaaggag gaagcccgat attcttggag caatgtatgg atgccactt tcatataaca	480
gacgttacga gcgtccgggc aaacgttctc cggccactcc ttttactacc tcgacgctca	540
gcaggaagca gcccgaaaac tcggctacgg tgtggcacag accatgcgat cgctcagaag	600
ttgtacgaag aaggcttatc acctattgcg tacagacctg tgaatctgtc ggatatggcn	660
ctcgtgcact caaaaga	677

(2) INFORMATION FOR SEQ ID NO:309

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 631 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...631

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:309

gggagcaaat aggagataag gatacggagc aaacgagaag cactattcgg aaacaaacag	60
aaagaagaga cccatccagg atctctacct ctctgtgcc aagcggataa agatttgacg	120
gagtcctatt atatccattt gggcacgtgg acgatgaaag caagactacg gcgaggattg	180
cagcctatcc gttgaaaacg gcgttatcga taaagagcgg gtgcgagaag tatcgactcg	240
tccctcaaac atctttccgt caataaaaaat ctggctactg caaaacagat cttttttcct	300
attccaaaga ggatcagact gaactggaga cctgtctgca attttcaaac ctttgagaa	360
gaatggtcag atcgagatct actatgataa gtgactaagt ttgaaacacc tattcaccct	420
gaaataagaa agcgtattgt caagccgact gtataatcgc tttgatcagc caacgctatc	480
tggccacgga tacatctcgg atcatgagtt gcctgtattt cgggagtata acaagaccaa	540
gtgccgatat tgatcaagcc ttgtacattc gaagaccatg agttccttgg agaattattg	600
ctcagaaagc tcaaataatc aatcttgaaa g	631

(2) INFORMATION FOR SEQ ID NO:310

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 879 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...879

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:310

tacacancag	caccacgaag	tggcgaaatt	tccgcatatg	cagaaatatt	tttcgtatat	60
actccgataa	attttcgtat	atacgggaaa	taaatttctt	atatacgcaa	atatatttct	120
ctatatacac	aataaagaga	ggctcggata	ttgctctgga	actctatagg	agaatgaatc	180
cagagcaaag	ggctaattctg	cttgtgtaaa	cctaagggga	aataccgatac	gacagttgta	240
accccgcata	ggactaaccg	gtatgtctgt	aaacatatat	gaatcccgcg	cacccaactg	300
tcaacttttt	tcagtacaca	acagtttgcg	agaatatccc	tactttacac	gtaaagaaaa	360
tagaaagcaa	attttgatga	ctacgtccct	ttcaacaacg	atgacctgaa	ccaactggaa	420
tctaaaggca	tcacaccgga	aaagcaatgc	gccaggtaga	agctctcaga	tatggattcc	480
cgtatcccaa	atcattgcac	ctgcttcatt	agagaatgga	atcatgcgtt	tggatgaagt	540
gacaaatccg	cttatctgtt	ggaatgggac	agatatattga	atagtccgac	tgcaacgttg	600
tcaagtttgt	accggcatcc	ggtgctgctt	cgcgcatttc	aaggatttgt	acaacttcct	660
tgatgccgat	tcaatgagcc	aactacgatg	cagagaaggc	gttctttgca	caccttactc	720
gatttgcatt	ctatgctccc	ttaacgagac	atgcctgcgc	aatgcttggc	gcacagtgcc	780
caaatcatag	ctttcaaaga	atacaagacc	gtgggtggaga	atctgctcta	tccaaaggtc	840
ttaactatgg	caatcttccg	aaaggttgct	tctctttca			879

(2) INFORMATION FOR SEQ ID NO:311

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 967 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...967

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:311

agccgctgtg	acgacgaata	ccgcgaaaca	caccaaaggt	atatctgcct	tctgatcgaa	60
tatgtgctat	atcgaaacca	tccgcatcga	agacggccgc	cctatctgct	tgcgctccat	120
caggaacgaa	tgagccgcac	gtgcgacaaa	agggctttcc	cctcccggaa	ataccttgcc	180
tgacgaatct	atgcccccg	aattgatgtg	cggaaatgacc	aaatgtcgta	ttctatatgg	240
taagggggca	tttcggacgt	ttccttttca	ccttatacac	cacgccaaat	atccccctgc	300
gtatcgtaac	ggctccagcc	gatttggact	atcatttgaa	gcagttgacc	gttcgtctct	360
cgaagctctt	ctcaagcaaa	aaggagaagc	cgtgaaatta	ttatcctgcg	caacggactc	420
ctgacagaca	catcctacac	cacctccttc	tacatatcgg	aggagaactt	ctcacaccgc	480
gcgtccctct	ttagaaggcg	tacaacgcgc	gtatctgctc	caatccggtc	aaatacgacg	540
gcagacctgc	aaatcgaaga	cctcaaaaaa	gcagaagaaa	tactgctgtc	aatgccatgc	600
tccccttggg	gcataccatt	cgtatacacc	catcgcaatt	attttttgat	tatcatcttc	660
ggctatcgga	tcgagttatc	cgacagaggg	ttagaagagg	taggagatat	tgcagatagc	720
cccgatggta	tggccgacgt	tcgttcggct	tgcggatcgg	acaggatatg	tgagatgaca	780
ccggcgtttt	gccataggct	ataccgtcct	ttcttttcat	caggtcgcca	tacaccgcag	840
ctctgtcatc	aggcggtggg	tattctgcat	cggaaatcgag	actacagaga	ggaacgcacc	900
tccacgcctt	ctctattacg	ataggcatag	gcaaataggc	cagcgtgata	gtcagagctgc	960

tctttct

967

(2) INFORMATION FOR SEQ ID NO:312

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 547 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...547

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:312

```

ggggtaacga gcgacaatat attccccgtc atcaaaaaat tccgtgtacac gaccatgaga      60
tattcctgcg tgagatcgtc tccaatgccg tggatgctcg cagaagctga aaacgcttac      120
atccgctcggc gaattcaaag gcgagaccgg gacctccgcg taacgggtcag cgtggatgaa      180
gtggcacgca cgatcagggtc agcgaccgcg gcgtagggat gaccgaagag gaggtggaga      240
agtactcaat cagattgctt tctccagtgc ggaagagttt cttgaaaagt acaagacgac      300
aaggccgcca ttatcggcca cttcggactc ggattttact cggtttcatg gtgtccgagc      360
gagtggacgt gatcacgcgc tctttccgag aaatgctacg gcggtgaaat ggagctgcga      420
cggatcgccc gaatacacgc tgaacctgcg gacaaggctt gaccgtggca ccgacatcgt      480
gatgcacatc atgaggagaa tagcgagttc ctcaaaaaag aaaagataga ggggctcctg      540
gcaaata                                           547

```

(2) INFORMATION FOR SEQ ID NO:313

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1482 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1482

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:313

```

gcaatccatg tctttttacat cccggagaaa aaaaatcgaa aagaaattag aaaaggctga      60

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tctcgaaaag	gacatcactt	tggatgtcag	ggcagaggat	tcaaaacagc	gttctataaa	120
ttttatagtc	gttgaatgag	cgcgcagcat	gtattcagtc	tctatcggaa	aatctcttca	180
tggctctcga	cccacgatag	agagcaaaga	agttttatcct	cttgactttt	tattcctgat	240
cgtttcctct	ctacgcctct	aggtgatacc	tctggtagca	gattgaagat	tatgagagga	300
atacgaagaa	gtgttgaaaa	gccggtacga	aacacttacg	atctaggcgt	acgatgctct	360
cctgcacggt	gcaggagacc	ggcgtaggcg	taggtgctcg	ttacaacatg	ctaattacca	420
gtacattatg	gccaattaag	ggaaatgaaa	ataatcttgg	aagttttccc	tgttttgcgt	480
cttcaaaatt	atTTTTCCCC	cttgtttggg	aagatcagga	ctcatttctt	ataatagaag	540
gcacccatga	ttgtaatttc	caatagtaag	agcaacacag	actacagaaa	ttccccgaag	600
agaccggccc	cttcggcagg	gggctatcgt	atttgaangt	tgtactccgt	atccttggtc	660
tcttccttct	acaattanga	tctctacaca	ttaattcgtg	tttattccgg	acggaacatc	720
atcagacctt	tattttaaag	caattgccct	gctttggatg	tgattttatag	ggatatagaaa	780
gcggaatatc	ggattttgag	accttttgca	tgctatagac	agcagagtta	aaggaatagg	840
attcatttat	atgatgtaaa	aaaggattgg	ttttatgatg	atttcttgct	ttcggaagaa	900
caaaaattca	aaaaccaatc	cttcttaata	ggaaagagtt	gtaacggtcg	aagtctttct	960
cagacttcgt	tatcactgat	gcctttcaga	gaggctacat	gccccagggt	gcctccatcg	1020
agtacgttga	gaagccgttg	cgttcgagaa	tgctcttgcc	ctggctgctt	ctggtgccct	1080
gcgacagaag	acgatgatgg	tcttcttatt	cttgagttca	ttcaggcaga	tgctatccgg	1140
tccagcggaa	tattcacggc	tccggctaca	ctgcctatgc	aaattcacc	ggcgtacgca	1200
catcgaccag	aaaggcgccg	ttgcgatagc	ctcactcaga	gccttatcgt	cagactgcga	1260
gaatagattt	ttcataatcc	taacatgaca	attgcgataa	tgatgggtta	ggaaaacgat	1320
atTTTTTTTT	gacactttgc	tttgacatac	atagtcggtt	ttgggaacac	cgtctgcgca	1380
atgcttgcca	atccgccttc	gatgtccgtg	aaattacgat	acctngcgag	agtaggatgc	1440
tggatgcaat	catactgcgg	tatncacctt	acaatgcaga	ta		1482

(2) INFORMATION FOR SEQ ID NO:314

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 396 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...396

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:314

gtgctcggaa	aggtatgtct	gcgactataa	gcgactccat	tcgctcctta	tccgcacgat	60
ctctccgggt	gtgatcatat	gagcattctt	gatctgacat	agtaaccggt	ggacaatgaa	120
tgttcgatga	aaagtttgct	cccgggcata	tgtctgcaac	agccttgctt	aatatgaagc	180
tgagcgcttc	gacgtagttc	gcatacccca	ttcgctccga	aaagaagcga	acaggacatc	240
ggatgctcat	ataatctgaa	accaagatct	cgtgtacaat	gattgacttg	tgcatgaaag	300
gacgaaagcc	caaatcgtct	tgaaagtact	ctgccactcg	ctcaaagata	tgccatgtgg	360
aaactcttcg	tagcgatcga	gattgtcaca	gtgatg			396

(2) INFORMATION FOR SEQ ID NO:315

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 475 base pairs

(B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...475

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:315

ggcgcagaag gctctgccgc atgtgtccac cggagcggat gcccttgtag gcggaaagtg	60
ctgggtgacgg aaaccataga tccgacgacg gacaaaggcg cgtggctgtg gatggagatg	120
tttggacggc tcgctctctg acaggggggt gatagaaaag ggtatgcgtg tggaaatcgt	180
atcttacgaa agcatttcct gaatgtagt gttcttggtg acgacaaaca ataataatcc	240
aacaaaaaac ttatttcatt atgacagcaa caggatttat ccttgccggc ctgacattct	300
tgtgatagcc attattgcca atggcttgaa gatcgtgcag cagccgagac catgatcatc	360
gaacgacttg gcaagtatta tcgtacgctc agtcgggagt caagtatcat catccccctt	420
atcgacaaac cccgtcccat agcaagcgca tcgcttatac actacccttc ggaca	475

(2) INFORMATION FOR SEQ ID NO:316

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1884 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1884

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:316

acggatggaa gccactttga tgatcaacgg atggtcggtg tcgttaatgt catattgatg	60
ccggaaaggc gtatcacctc gtgcaactga tttgcnacgc tcattgatga tgccatagcg	120
gggcataaaa atgcgcacct cgntgcccgc tcttgaatgn gtctgaggca atttgccgga	180
aacgaccgat atgtcctttc cggcaagtag gggaaaattt cttgggatat gtaaagaatt	240
tttttgaatc cattctttta ccgtcatcta cgtttcttgc aaaggtacaa aaaaactcat	300
cggcaagata aggaagaagt acgtaaagcc ctcttagata agttaaaaaag accaaatacc	360
tcaagaatcg cactgcaaag gctaccataa acagctccca aaaccagacc taaacggagg	420
agaccaaagt gcgaatcgag aacaaaccac tcaaggatga gcacctgatt atgagaggat	480
taagccaaaa atccgacaag atgggaaaag aaatagccga agaagaaccg gctgggggatg	540
ccaccttttc acgagccaaa aaacggcgac tcaccggccc taaaaatggg cgcgtaaaaa	600

ttttcctttt	ggtgcgagaa	aagaaaaatt	tacgcgcaca	acgaaaaaaa	tctcgcgtca	660
cttttcccaa	aaacacgaac	cgcaatgcag	cttttgcggt	tccggaattg	tccggagatc	720
ggctgaggtt	cgagaagacg	gttgggcgta	ttattcgtac	tttcgtgtat	gattttcaca	780
cgctcaccgg	attattatcc	ggggttagtc	cacaggctgt	ctgaatttgg	aatcagagaa	840
tcatatagaa	tacagaacga	gaacaaagat	gagcgaagag	ctcaacactt	gtcaccgggt	900
gaacgtctct	atccccctct	caccgatatg	aagaggttcc	cgatcgttat	ttgcacgggg	960
aagtgtacga	ccatgagcag	gtgatgagat	cgggagagag	gaagaagact	ttcttctctc	1020
tatgccggag	aggtttccaa	tgagatcgaa	gtcccgctct	tgcatacgcc	ggaggagggt	1080
tgctacacta	ttggggctac	ccttcgttca	ggcctgtgca	gtcccgctca	togaatccgt	1140
tttggcaggg	aaggacacat	tgggactact	ggccacgggtg	gtggtaagag	tatcacgttc	1200
caagtccccg	ggctgctact	gccggtttga	ctctcgtggt	aacgccactg	attgctctga	1260
tgcgggacca	gatctgggat	tgcgccaaaa	ggggatcaag	gcgacagccg	ttcatgccgg	1320
aatacgcgcg	agcagattat	caccacgctg	gacaactgta	tttacggccg	ctcaaatttc	1380
tatacgtttc	gcccgaacgt	ctgggctcgg	aacttttctt	cgccgtctgc	atgctctcag	1440
ggtaagtctg	ctggctgtag	acgaatgtca	tgtatatccc	agtgggggta	tgacttccgg	1500
ccggcatacc	tctcgataga	gacatcaggg	aggccctgcc	ggatgttccc	gtattggcat	1560
tgactgctcg	gctacacggc	cgggtgatcg	cgacatacaa	cgcactctcc	gatttccgag	1620
ccgaacgtgc	tgagaaaaag	ctttttccgc	cccaatctgt	cgtattcact	cgccggacgg	1680
cagacaaaga	gacgatgctg	ctgcataatc	tcagngcgtg	gacggttcgg	ccgtcgtata	1740
ctgtcgcaac	cgagataagg	cgcggatctg	gcacgcttct	cggcgaaaac	ggcttctcgg	1800
ccgatttcta	tcagccgggtc	tcaccatgtg	acacgggaaa	tacggcaaaa	aagctgggat	1860
gaggggaacg	ccggatcatc	gtct				1884

(2) INFORMATION FOR SEQ ID NO:317

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 513 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...513

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:317

ggtgttttgg	ccacacaagg	tacagttagt	tcgcatagct	accagctcga	atcgcaaaat	60
tgttccccga	aatatgagtc	accgaagagg	cgtgtccgtg	tgggtaccac	tcgtggaaac	120
gggcgaaagt	gacagcccg	gggctgatat	ttcattcgca	agcatctgga	cagtatcatt	180
gccaagggatg	ataccacgat	acgattatat	tggcgtgcac	acattatcct	ctattgcgtc	240
ctaagtgaag	cgtttgctta	cgcctactat	caagctcata	gcacagggtg	aactgtggcg	300
cattctttga	aagactatct	cagtcgccac	cccgaatgg	acaacgcatt	gagaagggtg	360
gcaaaacatc	ctactacacc	acggagagtc	cgacaaattt	ggagaattgg	catccctttt	420
ccttaaggag	gaagtggagg	cgagcatgta	accattgatt	gaatcatatc	agcaacatta	480
tgaatagaag	cagtatctta	tagcattggt	cat			513

(2) INFORMATION FOR SEQ ID NO:318

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1350 base pairs

(B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1350

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:318

ccttggetct	tgagggtagt	tttactacg	gattggccga	ggggttagcg	agaaggctat	60
cgtggggatg	cgttgcgtag	tacetttcgg	agccaagcat	actatacggg	gattatcatc	120
ggactgtccg	acaaacgtcc	caatctgaaa	tttcattcaa	ggaggttctc	ttcctgcctg	180
acgataagcc	gtcagtaact	gcctcacagc	tgagtctgtg	gcagtggctg	tcggcttatt	240
acatagtagc	cagggagaaag	tactccgtgc	tgctctgcct	gcagcattac	taccgagagc	300
cataccgtca	tccattataa	tacggnactt	tgaaagccga	cagcggctta	gtcgtgatga	360
agaggagctc	ctcgatatatt	tggagtcggc	aaaggacgaa	cctacacgct	tgacgccctg	420
caaaaggctg	tcggcaaacg	acgattcgcg	cttttacctc	cttggtcgaa	cgaggggcca	480
tacggctgga	gaagaagtaa	aaagccgtta	taagcccaag	tcagaagtat	tcgttcgtcg	540
gcagagcctt	tcgggacgga	aaagactttt	gcctcgcttc	tggatagttg	catcgtgctc	600
ccaagcaatc	cgcccttttg	cttcattggg	cagagctata	acagagcact	ccctcccata	660
ttcctctccg	atgccgcaaa	ggctacggcg	gagtcogate	ctcatgctac	agtcaccctt	720
tccgctttga	aaaagaaggg	atttttctat	ccgaatctgt	tacacactcg	gtcatgtatt	780
cggcggcgga	ggtgagtacc	gcttgtggga	gcagcccca	gaggaagaaa	aagcattcaa	840
tcggaagaga	gttctacaga	ctccgcagta	tcggcttctc	tactcaaaaa	cctctttctc	900
tcctctatac	gcatgacttt	cgacgcaaag	aaaacaactc	ttagaatgga	cggaagaagt	960
tgtccgttca	ggaggccaag	cctgtacctc	tctccggaag	cgaacaaacg	aggaggaagc	1020
gatactctgc	cacacgtatg	gccgagaggc	tgggcagttg	tttgctatcc	tatcatgctt	1080
tgaaagcgat	gccaaaaggg	tggaagtgtg	gaacagattg	gccacaagga	atatccttgc	1140
gtggtgctgg	gtgttcgacg	ggcacttttc	ctgccatccg	tcgcttgcca	ttgattatcg	1200
tggacgagga	acaggaatac	ctctaaaaca	gcaggatcct	gccccccgat	tccatacgcg	1260
acaggtggca	gctcactcgg	ccggatccac	gactgcctcg	ttgtgttggc	ttcggccact	1320
cctctgccga	ggtgctccac	caagtgcgcc				1350

(2) INFORMATION FOR SEQ ID NO:319

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 402 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...402

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:319

```

ggagtagtaa ttcctgaaat ccttgagctt ttgcagaaag tcgaacaggt gctcttcaga      60
ttgtccaagg agagcgcgtt ggcttgcagt tcttcctttc tttttttgtg agttctttct      120
tcttgaggga tttgtttccg gaagattgct ttcgaagagt ttcttgccgt atgcggctcc      180
ttccaaaaag gagaaagctt caggatcaaa cttctcagcc gagctttcct ctccagatcg      240
ttgtcaggtt tttccattgg cccttgaaga agagtatac ctcacgttg gttaatcggc      300
cttgctgtag gcgagctgcc tgtcgatgtg ggcgagggtg ataaggcgtt gtgaccgtgc      360
cagattgaag aaagctgccc agaaatgttt gtctccagcg tg                        402

```

(2) INFORMATION FOR SEQ ID NO:320

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 517 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...517

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:320

```

gaggatcccc gggttttttg tgcaaaaatc agcccgaaaa tttgttgtga acgtaaaagc      60
ggataacttt ggcacagaaa aaggtttatg acagatatca tccgccctc cttctcatag      120
atacctctac tcgcgtttgc tcagtggggg tgctgctgca ggtactatta tctcacaacg      180
ggttagccat gtgggcattc gcatgctgct aacatcggcg tattcgtaca agaggtcttg      240
acagagcaat aggcttagga gtgaagcctt ccatagtagc tctaagttcc ggtccggatc      300
atataccgga ctacgcatcg gatcgcccat tgccaaaggg atagctttgg actcgggaata      360
ccgcttgngt ctgtccctac tttggagttg atgctgaggc tgcacgacca ctgtctnaac      420
ctgatgggtt gatttgccct agatcgacgc cagacgtatg gaagtttata cagcactttt      480
cgattccaan gtaaagccct tactgataca ctgctct                                517

```

(2) INFORMATION FOR SEQ ID NO:321

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1385 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1385

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:321

```

gccaggtg aaaccgaggc gaaaatcata tttgctcttg atgggcattt ccaccaata 60
gaacttttga gtccgatccc cggtgaaaag ccattgctac tgtggcaaca tcttcggact 120
gaagtacaag gtcactgccg gctcttggtg ggtgtcatag tggaccttgc tcttgggtat 180
cggtgagaaa agaatagggc gtcattgggt ccattcccaa tacgctccca gatgcttggt 240
ataggatatcc ccaaactgat gaggaagcgg ccgagagctt ttttgtcaaa aaagcttctg 300
cgtcttcgaa gactattacc ttttcaacaa taccaatgat actgggacat tcgtatacat 360
gagcttcgga ctccggcctt ctccacagtg tgtcttcttt catgtattcc taccgaaaaa 420
tccaaccctt cgggcagaat gtgtggtgta ccctcatccg tatgctcatg tccatgccga 480
agatattgcc caaaaccat ttccggcctt ggccgaactg aaagtggtag ctgcctcaag 540
ctcttgatct ttaacttcga ttgggcattg gccgagagac caaaaaacgg agtaaagcac 600
atatcgatcc tgtcaaagta gtttttttca tttcagtatt ttttttgtgt tatcgattct 660
aaatgggagc gaaggtatca aattataaat gattgacgga gccggatttg gaggaaaaca 720
ttttttctt gcagtttctc tttttctcgg gcgtgttttc tggattgtac gaaagaatac 780
ctactttgcc ctgcacagac cgctacgggg gtgcttgccg gcaagaattg cgaacggcag 840
gctgagataa taccataga cctgatccgg ataataccgg cgagggatgt agaatcgaat 900
acacactatg cgtgccagca gcttcgggag agcaccccat tgtggacggt caaccacatg 960
tgaaagaaca gatattatcc tcaaaagcac gcaaatgcaa gttactatca acaaccaacc 1020
gatcacatgc tcgaaggtat gggactggct gccctcttgg aagccgagcg gatccaaggg 1080
agcgcacggc catagccgta aacggagaag tcgtaccccg tgcctcgggc cggacttccg 1140
tctgtccgaa ggcatgaga tcctgatcat ccaagcacct atgggggctg accgacgtac 1200
cttcagcttc aaggcgatag tctcaaacag taaaaaccca aaccattac ccgattgata 1260
tgaaagaatt caaatgacta ccggtcctct gccgggcagt gagaaaatct atgtcgaaga 1320
gaacgtttcc ctctgtgcgc gtaccgatgc ggcgcacccg aatgtccgac acatattgga 1380
gaacg

```

(2) INFORMATION FOR SEQ ID NO:322

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 527 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...527

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:322

```

gagatcgctt agattgctg tccccaaagta tttacgggtg tactggacgt gcctccttcc 60
acttgatcaa cggatccgaa ctggtacccg gatgcggata aggaagcact cccgcactca 120
tagcaatgga tttgaaaata ggaaaaacat ggcgaaatac tcaatgtttc ccattttcct 180
attgtccttt ttcccgctc ggcataccac gtaattccgg tagatgcacc gaaatcgaag 240

```

ataaagtc	at	cgaatccaca	gccgagtatg	aagcaggatt	gacggcattg	acgttgtgcc	300
ctgacgcaga	ccgacgccga	gtcctcccat	ggaatgcccc	ctatagtcgt	ccgttctccg		360
agacggccaa	ggccgaagcg	agtgtaaggc	gacggtataa	gttggtgttc	tgagcctgta		420
taccgtctgc	tgcaaatagc	acccaatgat	cagggcatac	caccgaagcg	acgcatacaa		480
acccttatag	ctttatacat	tatatcttaa	aattctat	angccca			527

(2) INFORMATION FOR SEQ ID NO:323

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 474 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...474

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:323

tcgttc	catct	tctcaga	aggaat	atgg	atatgcc	aat	atcttat	ata	tggtt	acttt	60
gcta	atagat	aatcag	ttgg	gggcg	attat	tcgta	agtc	agaat	tttga	agaact	120
gattt	gatta	gtaaaca	agg	attaatt	ctc	gaaaatt	agc	atcttt	cgg	ccatatt	180
taa	atgctat	ggtaat	ctca	agcaa	agtaa	ggttat	cgc	atatc	agg	c	240
atta	atgatt	attcttt	tcc	tgatg	agaat	ttgcg	ttcta	agcg	attgga	gagatt	300
atga	taccaa	tgtttt	tattg	gat	atgtg	ta	gtaact	tatc	ttcaa	agaaa	360
attg	aatgta	caattat	gaa	tctat	atatt	gcagc	ataaa	agttg	tggtt	caaggg	420
aaag	aaaata	cagaa	agatt	cataac	ctac	tcgtt	cgaac	caaata	aaaat	taat	474

(2) INFORMATION FOR SEQ ID NO:324

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 395 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...395

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:324

```

ggcttcaatc cagcatcttc gatagcggtt gtcataacca gcttggtccc aacccgtcag      60
gatgacttgc cgtcagggtga tatgcacggt ctgaaagact gttcccacca attcggcata      120
gatgcgagca ccgcgtttta gagcatgtcc agttcttcga gaactataca tgctgctcct      180
tcacccatta caaacggtca cgactggcac tgaaggggag gctggcctct tgtggagcat      240
cgttggagtg gagagagcat tcattgcatt gaaacctccc actccggcag cgcaatcgac      300
gcctcagagc ctcttgcaat gattacattg gctttgccta agcgatcaga tggcaagcat      360
cgatcagagc attggttagag gaagcgcatg cgatg                                     395

```

(2) INFORMATION FOR SEQ ID NO:325

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 614 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...614

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:325

```

ggaaagaaag caagagaaac gaaaaagaca acgaagcagg atcgacgggtg ccgacctctc      60
ttgaagaggg taaccaacga tacagagggtg taacctttcg agcactatcc gtcaaagagg      120
caaacaacc caagtaataa cctcaacta aaaagaaacg attatgaact tagaatctgt      180
tttggtacct gcggtatggt ctacttcac tttaaagatt ttogaactct acgtacgccg      240
aggcgacgac ttgcctgat cgagaagctc gactccttgc cttctccga aagaatgcag      300
acttaacaca gttaacttcc tcttttagca cccgagacaa tcaggggctcg gcatcaaagt      360
aggtttcatg atggtaggca tgggcatcgg acgntngctg gctttctttc tgacatttgt      420
tttccaacgt gtaatagaaa acttgacggc tggagcttcg gccacacatt cgaaaccctt      480
tcgggaatct tctgctgatt tttggcggtc tcggacttct gattccttcc atcatcatgg      540
caaggagaag agagacaaac aataaaagaa caatcgcaat aaaaatgacg acatcaaagg      600
catccacaaa actt                                     614

```

(2) INFORMATION FOR SEQ ID NO:326

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1023 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...1023

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:326

```

ggttttaccg tgggtctacgt gggcaatgat ggcaatgttc ctnatgtcng cattttcttc      60
ttctgagtaa ttggggacaa aggtagtaaa acgggctgtt ttcggaatgg atatccaagt      120
gttcggatcc tgcacattcc atctgcagag cgttgcattt gcaggcaaaa aaagacgccg      180
acgaaagtgc tctcatggcg tcaataggat tccaagatat ctcttgatag agtttttcag      240
ctgacatata cgtcttacag gatgatgttc ttagatgtct gtgtattatc agcaacaaaa      300
cagtgcagag aatatggcct ttcgtcttta agtcgataca aaatctctgc cctgtgtctg      360
actcgtggca aaaagcatcc gtcctgccat atataaatat agaccgattt gatcagtttt      420
tctgccttga tgccgatggg ctcccttgga tgtagacgtt tatatcgttc gacgaaggta      480
caactgtttg ctatctgtcg tatggcatga tttggcaacc gtgctataga agataatgga      540
tacttcagct gataatcctg cacaatgtct ccctctaccc tgacgcgctt tggaggggat      600
aggagtttcc ggctatcatt acttctccgt tttcactctg ataaagttgc ctctgtcctc      660
tttgattgcg atctcgaagc cgtgtgtctt tttacgcaaa caatagtcgc tgctacttcc      720
ggatacgtaa attgcgcata gggatctcgg taaccactcc ctcgaaagtt cgattgggga      780
gagtatgcgt gtgcacatca gtccatagta ggcatcgaat tcatggaaac gacttctgta      840
attagcatat cgcccaactt ggcgtatgga cagaactccc ttacccccca taataagctg      900
taggataata ataacctttt ccctgataac taatggtgct ctaaaggcta tcggttgta      960
aaggcattca gttgtgcctc cagaccatcc ccagccgagt gataatcgac cgggactgtg      1020
tcg                                     1023

```

(2) INFORMATION FOR SEQ ID NO:327

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 444 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...444

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:327

```

ggcgcatctc ctccctcacg gtttcatcaa tatccaatgc ttcgataaac ttgcaatgga      60
ttcggtgtgc accgtctcat tcgtacgcgt cagagcctca acgtttcgta tggattggga      120
tacccttctc tacgaagaat agtttgtag cctcagccac cacagcatag ttgttctgca      180
aatcccgatc gagagcgctt cgttgagaag cagtttgcca agccctttgg ctatgctcgt      240
gactgtatga gagaatgcgc caaaggagtt ccacgttacg aagtacagtg gaatcgtcag      300
atctcgtctg aagcgggaaa taggcaattt gcgcgacaaa tgccaaatat ggcattcgca      360
ataccagat tgccttcggc attttcatag gtgatcggat tcactttatg tggcatggca      420
gaagaaccga cctcgccgcc tgat                                     444

```

(2) INFORMATION FOR SEQ ID NO:328

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 711 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...711

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:328

```

aagcacttac gggacgatac ataggtgcac gccggtcgga cgaattgcgc tgatgatcca      60
tcgccttttt cgcacgggga cggtcgtctc cctcatggca ccttgctcta tctgctgttc      120
ccggcccgctt tgctttcggg gctgagtaca aatacgaagt gatagagcat gctcgccggt      180
ttgctttctg ggcaggggtg taccgatcgt ctcccttgcc gctttcctgt gggatggagt      240
attcgggggg ccactgcata aaaagccatg cggagagcca tgacagctgc tttcttgttt      300
tcttcgccac tttcttcttc cttcgtggag ccttgggcga gacgcccttt ggctcgcctt      360
cgctcctctac ctctcacgc gcagcctgat gcgacagtat ggtaccgcag gcattttttc      420
gccacgaatc gtctgcaaag ggctgacacc ggaattgggt tgtgcataac ttcccgaat      480
caagcaggag agagagaatc agatactcgg atcggcagcg gctctttcgg ttgcataccc      540
actttagccc aaaacaataa ctttgccacc agtgtgaaat ccaaaaaaca tccaaccaat      600
gaaacgaata aatcttctcg cagcttcaat gaagctgctt atatagcaat agcggccacg      660
gctatcaccc tgctgtccgc ctatgcctga caaaggaaaa tccggatcaa g              711

```

(2) INFORMATION FOR SEQ ID NO:329

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 507 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...507

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:329

```

gacgagggat gagccgaaaa acaatgaatc caacaacagt gactcagcat tacaaaaaac      60
atatcaggct gtcgggggatg gactgctgag cgaggcgctc gcctcgctccg tgcacggta      120
ccctcgcagc aatcgcattt cctcacagca tcgacgatct ggagaacgct tatcggcagc      180
tcttgtcata cttcgccaag gtgtgaaaga cgaaaaacag gccgagatgc tcctctacct      240

```

naagccaaac	tcataggtct	ggcagctgaa	gtgcatcgcg	aatccgtggt	ggcaagggca	300
cggggctttt	ctacgacgc	cttcgtctac	cgctcgagc	atcgtttcga	aagccttgtc	360
accttgctgg	agcaggctga	gacaagcact	gtcgnaagca	gttcgacgaa	ttggtacggc	420
tcatattcga	tagcttggtg	agggcgatgc	tctgacggac	gaagaggctg	ctgtccntc	480
gnatgccggc	aatacattcn	cctcgctg				507

(2) INFORMATION FOR SEQ ID NO:330

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 553 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...553

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:330

ggctgctgtt	ctgccagcac	ttcgtcgagt	gtctgataca	gcctttggta	aagagcagcg	60
caaagtccctg	caaggcattc	agagcgaatc	cgatttgcac	aagcctctaa	aagaaatttc	120
gcccgtacgc	tccaatctgc	gataggtggc	aacttcattc	ctgcccgtaa	agcgattccc	180
tcttggtgca	gattcaactc	aaccgtcggg	cctttactcg	ggaagcaacc	tgcatagcta	240
cggacgcgga	ttgcagtcta	taagtgtcaa	aattattatc	atacatatca	aaaaatctct	300
ttattatatt	atgttatcac	tttcgaagat	aataaaaaccg	ttcaaaaaca	caatcaaagt	360
gactgaacca	ccaaacgact	agaatctgtt	tttaatttat	cgtaagagat	tgtccagtgc	420
tttttcaagg	gtgacatact	taaacgatag	cccgaagaga	tgattttttc	ggccgatacc	480
ctacttcctt	cagtagaatg	gaagcccgtc	cgccgaatac	gcgacaaata	acccatttgg	540
tatggaggga	aag					553

(2) INFORMATION FOR SEQ ID NO:331

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1102 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1102

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:331

ccactattgt	tgcgtatgat	catcaatttg	ggaggggtact	ctgctatttg	aactttttta	60
gttctatggc	tacggggagt	tccaccattt	ttttgtcctt	gggtctatgcc	cctccactca	120
ggatagtcgg	agtcggaata	tacttgcttc	tgtattgccg	gatgtcggca	gaagacataa	180
gcccgaaaaa	aagtgcacga	acaagcccac	gtgattcatc	acgaaagcac	cgtcacgaag	240
gttcatttca	gacgcataag	cctgtctgta	gtaacgcagc	ccagtacaaa	gagcaatata	300
gatacagcag	caggaagtac	catgccgata	gcatggagct	aagcccaaac	gatgaatagg	360
atgctgcaat	cctctcccca	tttctgcggg	gattgttttg	tcagccccc	gatgactgca	420
agcagcagta	gcccaccgat	aaagtcagag	tggctatgtg	gccagataga	aaggagaaac	480
gggccgaatt	cggcgtatag	ctctacgatg	gaatatgccc	caaaacaaga	tgccggcaaa	540
agcaaacttc	ctccgaccag	attgaaagga	tacagcgaaa	gctgtggcag	tatcgggcct	600
gcgatcacct	ggagcaacaa	acctacaaaa	gcaagtctga	tatgatgaat	atgccttccc	660
tatagccgaa	gcgtccctgc	cacatatgtt	gtatgccgaa	aaaatagtaa	acagtcttag	720
tgaaaagaac	agatcgtctt	atcgtattag	accttatttg	gctgctatca	aaagaccttt	780
tcctttgctt	tcttcaccca	cttgggcacc	actgtctcca	agaacttttc	tttttcttgt	840
gcaacccatc	catatccaag	cctatatact	tctgggcttt	tttttggtgg	agacatcagg	900
cagtgggtacc	tcattccgat	agccatgacg	tcaagtaccc	gagctatctc	tatacgtgct	960
tgcattgcac	gtccagccc	ttgctgagaa	tacgtgtaat	ctcttgcggt	gcatggaatg	1020
aagctccata	gaagccactc	catagtccca	acgccactgt	gattggcgga	tatacttagt	1080
atgggggtca	ttttcctttt	ct				1102

(2) INFORMATION FOR SEQ ID NO:332

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 592 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...592

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:332

gcacatttcc	gctgaagcta	agattgttag	ttgcataata	ggaaagcgat	ggcttacacc	60
ctgattttcc	tgtgcacgaa	aagttttctt	atacgtttct	ccaagaccgg	ttcgccggat	120
ccttttttct	tttttatttc	gaacggatat	tctgccagcc	atccgtatgg	tagaagaaat	180
agttgggtatt	gctactaact	taccgatgtt	tatatcgagc	gaagtattgg	tttgccgatac	240
gttgtcttcg	atatgcgatg	tgacgtatat	gcaactcagtc	gattcggtatt	ctttttgtga	300
tcacattgat	taccccgggc	atggcatcgg	atccgtagag	cgactcgaag	cacctttcac	360
cagttcgatc	cgttcgatct	gatcaggaga	aaacgactca	aatcggcctg	accgcctaca	420
tcgccgtaca	cacgcttacc	acgataagga	tgaggatata	cttactgcta	aggccgntca	480
gctgcatgaa	gagcccatca	gattggggcc	gaagtcaaaa	gacggactca	gccctgcata	540
ggcctcgga	gtaggagccg	agaaagaggc	tatgtcctta	gcggtaagac	tt	592

(2) INFORMATION FOR SEQ ID NO:333

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 582 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...582

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:333

```

cgcctttcag tttcggcagg aatgattccc agtcgtcctg caagtcgcca atccccatgt      60
ggaagagccg agaagcagta catcgtatct cgctgcaggg cagcgtcggc atttgccacg      120
tccattacat tagcggagtc aacgcctatg cagaagcaat tttttgagcc agatcgctcg      180
tcgttcctgg agaagaccgt agaagattcc gattgatttc atgtttttga atagttttata      240
ttggttgacc tgcgcaaaag tagaggagat caacgacttg taatatcacc acaatagcta      300
aaaagaatag gtccatacct atatgtgggg ggattcccat cgaaaaaagc agcccgacta      360
aggccgtgcg gaggcgaaag catagagacg gctacctgct cggccgtgcg ccggagggttg      420
tcccgtgcat aagccggatt ctgcctctc taaggctgac gggagaagga gtaatcgga      480
agaggccgag aaaccggcgc ggttaagagc tacagcatcc tcgatactgg ccggccagca      540
taccacgggt atcttctgct tcatagcctn agccaacaca cc                          582

```

(2) INFORMATION FOR SEQ ID NO:334

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 476 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...476

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:334

```

gaggatactg gatagtatcc attgacatac ttatctcctc gccattccac aatctccaaa      60
aaggagaagt acccccccggt acccggcata ccattcttct gatattggaa tgcattacaa      120
cccattcttc gaatcgggtct ccgtagtttt atacttcggt ctttgtttga agtactgcaa      180
tgcttctttg agttcgcaat aagccggttc aatatctcca tagtatattc aagaaaatgc      240
gatgtataga atgtgttgca tattttattc ttgcctctgt ctgaataact tctgctctta      300
gctgatttcg atcggaattt gaaatgcaat taagcaattc tttttttgtg taagttttta      360
attttatgtg tgctgttatt atggttctga ttggctattc taatacatcc ttctcgtgat      420

```

tcttctatta tttgaatttt accggattgt ttganagggt aagtaggggt agatgt

476

(2) INFORMATION FOR SEQ ID NO:335

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 525 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...525

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:335

ggctacgggt atttttgccg agatggatca ttttcgtacc cgtatctgct gctggaaatt	60
attggttaaca gcaacggagt aaaactccgc tatcgaatgt cgccacgcag gacacagctg	120
ggatattttcc atgtgatggc agaaccttct cgacctgcgt ccaagatatt tttgaattgt	180
cgccttttga gacacccgct tggtcacgaa gttgtagata ccgcctttac cctctttgtc	240
tccggatacc aattctgtac cgtagaatac ttgacttccg cattgggtctc ggcatgatct	300
ccacgattgc agcatgaagt tgattttcat cccgctgggg agcgtacagc cttcaagata	360
gtcacataaa gaatcctcat cggcaacgat cacgttcggt cgaactgtcc tgtattggct	420
gcattgattc ggaaataagt aaaagctcca tcggacatct gacgcctttg gggatataca	480
caaaggagcc tcgctaaata cggcagagtt gagagctgca aagaa	525

(2) INFORMATION FOR SEQ ID NO:336

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 648 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...648

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:336

ggccgttaca ttcagagttg cgtgcatcgg attgccggca aaattcacat actgccttct	60
ttgatgctga aacgtttttg gacaatctgc cggagggttaa attataagtg cccgacaaca	120

```

gttccagccc tccgaataca ttcagatccc caatgtatgg taatcgatac gcaaattctcc 180
accggctgat ccgcgtagcc atcgccgggc tgcggatcca gtatcaaata cactctgtca 240
tccgggtcac gcctacattc atgaccaagt ggaaatccgt ctccggatct cctccgtagc 300
aggtagaagt agagaaggac gatccggcga agtttcttgt ctctcgctc acggctgttt 360
ttcggatcta cgaatcgcaa gaaacgatac tctccgctgt cgtaggctgc gtaaagtcca 420
gcacgatatg ggttcttttt tggaaatcag attgacgtcg catctcatcc ctccgggcac 480
atcgcgcaaa atgcagcacc cgacacataa acccggccat gtatattgng gttgtcccgt 540
ccggcacggtt ataagcaagt atattacgag ctactcgac ttccagatca ctttgatgtc 600
atcgaaagcg cgatgcgaga tatgtgcatt gagtcggccg tatgcccg 648

```

(2) INFORMATION FOR SEQ ID NO:337

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 719 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...719

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:337

```

agcgtcagct tttccttgaa aggaatgttc ttgccgggtgc ggatattgca atggcgggcta 60
tgatctcccg tgtacggctc aaggcttgca ggaagtcctg tccgtctcat gcgcacggg 120
caggaggcag agcatgatgg tctcgctcgc tgacgcggtt cgagtgcatt ccatagctct 180
tctgtgataa aaggcagaag ggatggagca aacgcagcag ctgatcgaag aatccgatcg 240
tactgcgtag gtcttcgcat ccatcggtcg accgtatgcc ggcttcacca tctcagatac 300
caggaggaga agtcgtccca gaacagcttg taaaccagtg tcatgcctcg ctacagacgg 360
acttgagaaa gagatcgctc aactccgtct tccctcatcg agacgatacc cgaaccattt 420
cacggccaga gccgaggctt cggctgcgtg gacgtttctg cctgctgcca tccttttacg 480
aggcggaagg attccatata ttattgcaga agttacgtcc ctgctccgag agcgattcgc 540
gaagagcaca tcgttgccgg ccggagcggc catcatcagt cccatgcgac tccgtcggca 600
ccgtatttct ccatcagcat gatcggatcc ggtgagtgc gaggtctctg gacatctttc 660
taccctgacc atcgcgcacg ataccgtcag atatacgttg tcgaagggtt tcttgccac 719

```

(2) INFORMATION FOR SEQ ID NO:338

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 522 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...522

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:338

```

actcaatcaa aaagaggggta atcgagttct ttacatcat tgaaattcac ttttcaaata    60
aatatctaag aggagcctta tcgggtcaatg agatacctta cattgacctt aacaacacct    120
attgagagat gctatattgct tgaagccata ctgttttgta gctccacaaa gcgattataa    180
gagacaagat gtggaacttg ggccgacctg agcaggatgat atattgaaga taaaagctt    240
tccaatttgg cgttttgaga gatgaaacag gatcaggatg gtcattgatct tgcttccgag    300
atcttaacct ttctattcca acgtcgaaca gacattgtaa ttatcacaaa ccggaccttt    360
ccgagtgcgc actctctttc agtacacgtc atggcacaaa agaaacagtt gttggactca    420
acttacaata gaaacttttt caaaacactc ttctacggaa atatcgata tatttgtatt    480
caaatacata acccgatgaa acgcctcctg ctctgcctca tt                    522

```

(2) INFORMATION FOR SEQ ID NO:339

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 566 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...566

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:339

```

cggccatcga aatcatactt gaagataagg ccaaggcctt gcgctcgtag gactggcgca    60
gatattgata gaggttggtt tagtggttgt aggctttata cgaatggagc cggacggatt    120
gattttatat tcggcatcaa attcgccaca taggtattct gtagattagg attgtccgga    180
tagccacat tcccgatgata aggagacnng tattcagcaa acgactactc aggagcagtt    240
ctatacgggtg tcctgaaaag aggtgttggt cgtcttgatg ctcgttccta tctgactttg    300
tcaactaaggc ttccgagcat attggtgagc tgctgcgaca gaggggtggtg gccactgccg    360
tccagttgtc tgtaccgctt cccgaattat agcattctcc ggcgataaaa actttcctaa    420
gacaagaaga taaacgatct gttcgtcatc gaatcttcgc tgtggatgag actgcgaacc    480
cgacgctcca ttcgctgtcg gagttgggta gcttgatgtc gaaactgaca gcaggcttga    540
acatggcacc attgatctga agcagg                    566

```

(2) INFORMATION FOR SEQ ID NO:340

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 557 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...557

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:340

gcgagcaatc	tctttcttgg	ccaagaatag	cccgtacagc	tctttgctct	cgagtagatg	60
atgctttcgg	gagaattgac	atacttggcg	gccttgtctt	ctttcctaag	attcttcctc	120
cgaaggctac	gatcttgccg	cttacggctg	tacggggaaa	atgactcgcc	cgcggaacg	180
gtcatctaag	gccttgtgtc	ttcgtatcgg	atggaaagcc	ctgtgtcgac	taagtattcg	240
ggcttaaccc	ttttcgtatg	gcttcgtcgc	tgaaagccga	cctcttttca	ggagatagcc	300
gagttggaac	ttctgcacag	tctccggacg	aatacctctt	tggggaagta	tgatcatcca	360
atggtctggc	cttcgatggg	attgagaagg	tttttttgaa	gaagtcattg	gcaaactcat	420
tgagaatgaa	catactttct	catcgctctt	gagtttcttc	tcctcatcgg	tcagctcccc	480
ntcgtgaatc	tgatnccoga	cttacgtgcc	aaatagcgca	aggcttcgct	atagctgagt	540
gtctatttca	tgatgaa					557

(2) INFORMATION FOR SEQ ID NO:341

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 522 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...522

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:341

ttagcttctt	tggcctctgc	atactacgga	catccatctc	gccatctgat	ctggtcgggtg	60
taaccggtag	gaacggcaag	accaccgtag	ccactctata	tatcgactat	tccgaaaaat	120
gggatataaa	gccgggtctg	tgagtacgtt	tgcaactatg	tggatgaccg	gtccgaaccg	180
accactcaca	ccacacggat	ccattggcat	tgaatgctct	tttccgctcg	atggcagatg	240
cagggtgcga	tatgctttta	tggaaagttag	ctctcatgca	gcggcacaaa	agagatcggg	300
gctcttgact	tcgacggcgg	aatctttacg	aatcttactc	gtgccatctt	gactatcacg	360
gctccgtacc	ggagtatttg	cgagctaaaa	aggttttttc	gatggcctcg	gtgcttcagc	420
tttcgcattg	gtcaatgccc	agataagaac	ggcctcgtaa	tggtagaaaa	cacccgagca	480
cgtgtatgta	ctatgcactg	agagcatggc	aaactatcga	gc		522

(2) INFORMATION FOR SEQ ID NO:342

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 409 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...409
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:342

```

gcctcagcat cggagtgcac ctgctcaatc tcctttgcat ccttgccatg ctttggtgta      60
ttactatcgc cgtgctgtta aacccacagg caggggagtt tgttggcact tttggcttcc      120
ttcgccctta tcgggggtgat gatgttcgtg tgatacaggg tatccctaag gttgccggcg      180
tattcgatgt cttcgcgta acacccttgg tttgagcttc aataacggtt tgtatttcta      240
tttctcctgc tggtgccat attgatttgg tctgtgaggg agacttattc cgtaagaccg      300
acggtgataa gaagggtaca accaaatcga tgcgcgatgc cttgccgcgc tgctgagtgt      360
ggtctgatgg gtattccttt tatcggcaat ggatccttct cgcatagcc                409

```

(2) INFORMATION FOR SEQ ID NO:343

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 589 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...589
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:343

```

gccaccaacg cccgtgtgat cgaatatcaa cagaagcgag atcagatacc gaacgctttg      60
ctactgcact gaatgacaac aatctggagg aaatccgtag attatcctcg actgcgagat      120
cgtctgtccg atcagcggta cgcgtaatgg acagaggtgc gccagtcca cctgatgttt      180
gccacggaga tgggcttacg gccgacggtg ccatgaaggt atatcttcgt cccgaaacgg      240
ctcaagcata tttgtcaatt tcctgaatgt gcagaagacg ggacgaatga agatcctttc      300
ggaatttgcc agatcggcaa ggctttccgg aacgagatcg tagccgtcag ttcatottcc      360
ggatgcgcga attcgaacaa atggagatgc agtcttcgta cgaccgggtg aagagctgca      420

```

```

atggttcgag aagtggaaaa actccgatat cagtggcacc gcgccctcgg ctteggagac      480
gacaaatacc tttccatgat catgccnagc tggcacacta tgccaatgct gccaccgatt      540
tgagttcgag atgccgttcg gcttcaaaga agtgggaaggc atccatagc      589

```

(2) INFORMATION FOR SEQ ID NO:344

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 726 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...726

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:344

```

atgataggca ctctactcg ctccgaccag atotccaact gctctacggc gcagcacgga      60
aggtatcggc agccccgagc acgacgtctc tgccggccga cgaaagcgat gtgccagctt      120
gccgatggta gtggtcttgc ctacgccttt acgcccacta ccatgatcac ataaggtttg      180
gtaccggagg gtaggtgaag ctgtcgccat cggccgatcc gttctccgtg agcagcgagg      240
cgatccttga cggaggatag tcgtcagctc ggaggtggaa acatatttgt cgcggccact      300
cgttcctcta tacgtttgat gatcttcaat gtggtatcga caccacatcc gaagtcacca      360
gcacgttttc caattcgtec aagacctcat cgccactttg ctcttaccgg ctacggcacg      420
ggtgatcttg gcgaatacgt ttctttggtc ttggacaggc ctctgtccaa agtctctttt      480
ttctttttcg gaataatccg aataatccca tatcgtatat actgttatat ctcttccttg      540
ttcattctgt tcttgtaatc ctcataatcg aaccggcgca acacctcttc ttcccgtcgg      600
tgcgacgagc tacgatgtcc ggatggcgtg caccgttaac atgtcgtctt caccgcggta      660
gtggagcatg tctcgaatat cagtcacgcc actgcacgcg atcgaaactc agtcaccgat      720
gaagcg

```

(2) INFORMATION FOR SEQ ID NO:345

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 693 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature

(B) LOCATION 1...693

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:345

gtcaaggata	tgcattggcaa	gtatcctttc	cccagggccca	cggcaacgag	gaagtactgg	60
tcacggggaga	gaacgcaggc	aaacaaatga	agctgctgtg	gccagcggac	tcgtggggcg	120
tctgtacgac	ttcatcgtgg	gcaccttggc	tggtggacgg	agaacgtttc	cacccggtg	180
gccgaatggg	gagccgactg	gccgagaagt	acaagctggt	ctttaaggtc	aataccggaa	240
gcggcgtcct	cggcctgggc	tatatcatcg	gtctgcctta	tgccacgac	atcttgccg	300
ttcgtttctc	gtctggttcg	ttatcatgcc	ccttatcggc	tactcgcccc	cggtatgact	360
caggccatcg	gcgacggtgt	gtcgtgact	atggcctgat	gagccctgag	gatattttcg	420
ccgtctatgc	gcgtcctctc	gcacgaggag	tatcgccatg	gcgggtatca	tcgggatcct	480
gcgctcgtcc	gaattatcgg	cgggcgtca	agctggccgg	taccgaattg	accggcaagg	540
gacgagtacc	atcgatgagc	ctcgacacac	gcgtgatctc	tcnatgaatt	cattacgent	600
ggcgtcatcg	tcgctttgtg	gtgacgatgc	ttttcttagt	tcacgtgcta	ttcaactggg	660
acatacgtg	atatecntgc	tgatcgtcat	ata			693

(2) INFORMATION FOR SEQ ID NO:346

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 839 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...839

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:346

ggcaatgtcg	ctggtctgcg	aagagggcaa	gacggcactc	gtgatcaaga	ctatgaagca	60
gtgcgtgcga	tcattgccgg	tttgctgacc	gaggtgcacg	catcaagagc	gagggcgact	120
ataccgccgg	caaagcgttg	gtagagctta	tgccgtccac	gtggatccgc	tcttgccag	180
ggaagtgtcg	acgcgcacgc	caagctggat	attgctccgt	ataagggatt	tgtcaatcct	240
cggtagac	cgtatataat	tcggagggca	ggcttacgga	tgcaacgata	gaatcacgga	300
aggctatgcc	gaacaaatgc	ttcgtacag	tgagaatat	agctcctgcc	tacagacagt	360
ccgcttttgc	aggaggcacg	aagattgcgc	tccacctccg	acgggcgatg	gacggtgtac	420
tatcggccag	tatgcgtgag	aaggactcca	ctacggcatc	aactttggag	tcactcgcga	480
acatctgctc	gactggctcg	cacggccgac	gcttcgcgtc	cactggccga	ctatctgtga	540
gacgcgatgt	aaggagagacg	aagatactcg	ccacgatgat	ttttccggcg	aagaactgac	600
tcattgagcag	gcaacgagat	tgtcccgaga	ggccgacacg	tggaacttcg	cgagcaactg	660
acagccaatc	tgctggagcg	aatgccgaag	cgatccggag	catcgccga	tggatcgaga	720
gcaaagagac	tactttgaca	tgatgaccgg	agtatggacg	cttgcaagcc	agaatggtta	780
caccgccgca	ttctttccgg	aagacgtgcc	ggcagaagaa	ctcttaacac	tggccattc	839

(2) INFORMATION FOR SEQ ID NO:347

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1903 base pairs
- (B) TYPE: nucleic acid

(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1903

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:347

atggtattct	tccgctgtac	aaccgttgga	ggggcttcc	atcaatagcg	atccggatcg	60
gagatcgcg	ggccacgatt	ggcatgctga	gcgtagcgaa	attgatcatt	gctgcatccc	120
aaataccatt	gtcgcgttta	gaatatcacc	agctttccac	ttgtcttgaa	tgtcgaaaga	180
ggtacgcca	ctgccgcacg	caccgtatgc	cccaagacca	gggcatcaat	tcaccccat	240
cgcacggag	aagaacggag	gacgtcccg	tgccgcaagt	gcgcgcccc	tgccccatac	300
cgttgctgcg	caacgatgga	tataggcggt	gaacagcagt	agtgtatttg	ataaaaatcca	360
cacccactc	ggagaatgtg	gcggcatcta	tccctctttc	tcaaaactac	cactcaagcc	420
atgaacgtta	agaggagatg	cttggaggaa	aggccgagcc	gcataccgcg	acgatgcagt	480
tcacggcca	atgtttgatc	ccattgggga	aacgtaaagg	atccgcctta	attctcccg	540
gctatcacgt	acggacgttt	gccagtggct	ttctatgatg	atatggttta	tccggctgca	600
accagtcctt	tactttgcat	cgcacggcc	acatccaaat	agtctgctcg	tttatttctt	660
tctccttcag	ccaacgtgta	ctccaacat	aacgggagcc	aatccattat	accgactcac	720
ttccacctgc	caaatcaact	gtcggcaccc	gattcggttg	ctgctgatat	ttcaaattcg	780
aatagatgcg	agaagaagcc	ttaccgcgaa	taattccttc	gtgggaatcg	aattaaatcc	840
ttcgggcaaa	tgcttgatag	ccaatgcgt	ggggcgatg	ccagataagg	tatcttgaag	900
gtccattcac	gatccatggg	ccaaatagat	ctccgggcaa	aagaatacgc	ggactaccct	960
ctgtcggact	cagtgcatag	gagcaggaaa	tgcgagaagg	agaatcagaa	gaaagcctgt	1020
cggctctcca	acagagagaa	agcgcacctt	ttcatcagca	gtgtactatg	gccaatcccc	1080
ctgagagggt	tccttatata	gactcggcaa	atccttgccc	gtctgaccat	cacttccacg	1140
acctgatcga	acgaaatgcg	gtgtctgcca	tcgtgaatt	ggcataagta	ttggcatcca	1200
aagctcgtgc	tgccgcaaag	gcattcggtc	gatacaaggt	acctgcacca	atccgcatac	1260
agggtcgcag	gtcatccgag	gtgatgctcc	aaagccatct	ctgcagcata	ttcgatttgg	1320
gacgggtacc	cccgaatagc	tggtctgctg	gcttgccgct	cccatggcac	aaccactccc	1380
acttcgccct	gacagccgac	ttctgcaccc	gaaatagaag	cttggtgcgt	accacattag	1440
caaaaaggcc	ggccgtagcc	agtgcacgca	tatgcgctta	tcgctgaagt	cacgagtctg	1500
ttggaggtgg	tgaggtaccc	cgggtacaacg	ccgcacgacc	cacatgtcgg	cgcggttaacg	1560
atcttgcccc	cgatgcattc	tggtcgtctc	cagccaaagc	ataggcatat	acattgctcg	1620
gcttcgtaca	cccggcgaa	acccctgcgc	acgaatcaga	tagctgctgc	cttcggggoga	1680
acgcccagtc	caccggcgag	cacccctcca	gcacagccc	ctcctgaatg	gcgctccgca	1740
ttaccgacca	gacctcagcc	aaatgtccca	tatatcgga	tcttcgtttt	cttcacata	1800
ctcccaatag	cttgccgcg	cctgttcagt	tcgtcgagaa	tatctgccat	cttgctgagc	1860
ggtatacctc	gcgacctcgc	tggtcgttga	agtgttcggt	ggc		1903

(2) INFORMATION FOR SEQ ID NO:348

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 578 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...578

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:348

gggctgcaaa	aaaggctgtg	ctcctcatatc	gagatcgcac	tgtcgccgc	ttgaaagaga	60
caatcgccca	actggacgaa	tacttctctc	acaagagaag	actttcgaca	tccccctgct	120
tatggcagga	acggagtctc	agcaaacgta	tggggcgagc	tgctgaatat	cccctacggc	180
accacgatct	catatcgact	cttgacgac	gaataggaaa	cccaaagcc	gtgagggccg	240
tagccgtgcc	aacggagcca	atcccatatc	catcctcgtg	ccgtgccatc	gggtattgga	300
agcgacaata	cgctgacagg	ttacgggtgg	ggattggaca	aaaggaattc	ctgcttcgtc	360
atgaaatgag	tctgccggtc	taaagccttg	aagcctctcg	aaggctatct	atatttgagt	420
atatttgcaa	gcataaaacc	attatataaa	aacaaagtag	aatatggatt	tcatctttct	480
tcaggccgac	acaagccgga	ggcctgttcg	gaggctcaag	ccagatgatt	ctggtgctct	540
gctcatggta	gtaatctttt	acttcttcat	gatcaggc			578

(2) INFORMATION FOR SEQ ID NO:349

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1530 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1530

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:349

gccggtattg	ggcattgggtg	atctccgggtc	cgatccatcc	aaaaaggcac	caccagatat	60
agggcgcgat	tcggcaagggt	atgccccata	agctgtctct	tctttggttg	cccaaccacc	120
aatacttccc	tcggggaacc	tgtatcacc	gaaaggcgat	ggctcattcc	atgaagatag	180
cttggcaccg	ggtcagtcac	cgccaacagc	ccgtttggaa	gagccgcacg	acgaaatagt	240
gaaaatccaa	acagaaaaaa	gcctgcaaga	gcgaaaaacc	tggtctttct	acactacatt	300
atattatata	ctgcttcgct	gctctccccg	aatcctgcgc	taagcagttt	tcagaggaaa	360
cgaatgcttt	tatactttgc	atctctatcc	ttgtattgct	caatgggaaa	gaatagctga	420
ccagcaattc	gtggcttccc	ctgaggcttt	agccagtaac	gatgtcggcc	actcgaaagc	480
atagccggca	agaacttgcc	caactgcac	cccaagctca	ctcccacggc	ttgtgtgggc	540
gatacatcag	tgaggcaaag	aagcggttgt	tgtatgacat	tcccatcgca	cgtccaaacg	600
agaactgtgc	ccgtcagtag	ctgcaaagat	agaaggagcc	atgcaataaa	cgaataaatg	660
gagcggatat	tgtatccggc	aaggagtaat	aatgccttgt	cagatctaata	atgtactgtt	720
cattgacgag	aattgcggag	cggtcagatg	ggtagagctg	aatccgacgt	acaattcttt	780
gcggggtagt	atatacctgc	accgatgtcg	aaggcctttc	cgctcacttt	ggtaggggga	840

tgcccgatc	gttctccgtc	tcgagctcca	ccttggtgcc	atgaaagccg	tattgacgag	900
tccggttgg	agggcgacgg	acagatctcc	gcgaagagtt	tctgtttgaa	ggcatattgc	960
cccatcagct	cattgatggc	aagagtccctc	tcgtttcggg	cactaccgga	actcccactc	1020
catgctctcg	tcgaagaagc	gaataggcgc	atcgccaggt	acgacgaaac	tcttaggatt	1080
cggggcatgc	cttcccattg	tctattgtgc	agcgcagtaa	tgaaaattct	ttgcgcatac	1140
cggcataagc	cggattgtag	tagccgtatg	cacgggggtac	tgagccagca	ataaatcgcc	1200
ctgagcgaaa	atatactctc	ccccgccacg	gtcaggagca	ggagcaaaat	gagcgaacgg	1260
aaagatttat	gcaaactgat	gccacggtgg	taaaacgaag	ccccgagtgc	tattattgca	1320
catcggggca	tattcgctta	aggagattac	attatcagta	ctcttcttcg	ttaagaaaaa	1380
atcctctttg	ctcgataaat	cgggccaaat	atcttctatc	gttcgtagat	ttccccttca	1440
tcttccattt	cctgcagatt	ctcgatgact	caagaggagc	acccgaacgt	tgtgcatagt	1500
ctatcaactc	atctttggtg	caggccgggg				1530

(2) INFORMATION FOR SEQ ID NO:350

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 638 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...638

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:350

cagcaacacc	caaactggca	cgggagctga	tgccgagaac	ggacggaccg	ccaaaggatt	60
gcgaaagacg	gtctgcatct	gcaagccact	aacggataac	ctgcgcgggc	aaaagcagcc	120
gtgagggctt	cgggcaggcg	ggatttcata	ggatattgta	gtgcacgagt	gcttctcctc	180
cttcgggacg	atctgaaaaa	gatgtcgga	gatctcgctc	atcggaatag	ccaccgagcc	240
gaggagagat	taaccccgaa	gagaatgagt	acagcccctc	ccagcgcagc	caggtaacctg	300
cgcagaaaat	tgtacgtaag	tggtgacgg	atgtcattgg	agcaataata	gaaatgcggt	360
tggtggtcgg	gaagtagtcc	ggggtgcaag	atgcgataag	atcggccagc	acccaatcgg	420
gatgcattgg	catgagttcg	tgaaggctgt	ttccctcagg	ttgcagtata	tcacgccttt	480
ttccttgaat	ccctgaaatc	ggcatatcgg	ctgtcttcgg	ctttcaaagc	ttcgtaacca	540
actccccggg	atagctgttg	aggattcgcc	agtagcgagc	cgaatcggtc	ggctgtagac	600
cgtctcgaag	tcgagggaaa	caccaccgga	tcgttgac			638

(2) INFORMATION FOR SEQ ID NO:351

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 669 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...669

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:351

```

cggccttggtt ttcgccgaac gcttctttta ctttggtgtg gtattggcct tgatcttgac      60
gaagattcgc cctaagcctt ctcccagaga agctccttcg cgaacagatc ttgatcggat      120
atctcatcca gacggcggac aaaagctgtg cggtgaagtt gatttggttcg cttccttttt      180
tgaacttata caattctcga gcgaaacgat agggatatag atgtcgtttt cttcaaattt      240
ctctagcatt catagtctgt cagcattaca ttagtgtcca acacgaaatt ctttttttcc      300
cttttagcagc cataacagtg cttttttatg atttgaatct ttcgaaaaat cgttcgaaag      360
ataagctttt tcatcgaccg tacaaccgat tattcttttt ttgttatata cacagcgaat      420
aaaaacatca caaaaaaagg atcccaaact tcaaaaaataa aatagaatga aatcgacat      480
tcagattgca gtgacatcga actgcaaaga atcgaacaga tagcagagtc aatcgacttc      540
ctgtcgaaca attagaacca tacggacgat acacggncaa agtgccgcaa gctgtatcga      600
cgaagagaaa gtaaaaaagg gaaatctgat ctggtgaagc cattacgccg aacaaggncg      660
tgtgggaaa

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(2) INFORMATION FOR SEQ ID NO:352

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 631 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...631

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:352

```

cctcgactct atatgtggca ggaagagcat gctcgactat gcgatactgg gctaataaag      60
tacttgtagg agtctattgt aaattagaaa tctacatctc cgtttttgtc tcattattca      120
gttggtctga tgggtatgtg gcgaaaggaa aagtcgcgta tagacctgac atctgtggag      180
cgagccatca ctcttacgag tatttccgcc attcggcaca gcaagtacac gcagagatcg      240
caggtttcag ctcactcagc aacagcaaca actccttgcc gagctaccag catctttcag      300
actgccgaag ccctgagtat tgcccaaaaa ttggggatga aagaagagct ttaaggatt      360
ttctcagtcg taatatcgga cacctctttg ctaggaaacga cacggacttt accataaact      420
caatatgtaa ccgagcgcac ttctgcatta tcagcatttc gccacccctt attaaaccga      480
aagtgtacaa gtgcagatag tgtgccattc aaatcaattt tatcaatgag caattatagt      540
tcaaattaga accatacaaa ggtgtgcgga cacggcatac ctgcccattg gcgaacgtcc      600
tcgatgcttc gctcgctata ttgacacaga g

```

(2) INFORMATION FOR SEQ ID NO:353

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 638 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...638

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:353

```

cgcctcgatg ctcttgaagg catcgctcgtc tatgtcgata tccttgatgc ctttcccact      60
cccgggatca tggatgcaag ctctttgagg ttacccattt tttgatctga tgtatctggg      120
caaggaagtc attgaagtcg aactgatctt ggctattttc tcctccagtt tgcgagcttc      180
ccgttcgctg tattgccttg agcacgctcc acaagcgata cgatgtcccc catgccaagg      240
atacgtcggc catacgtcgc ggggtgaaaag catcgattgc ttccatcttc tccccgtacc      300
gacgaacttg atgggcttgt ttacgaccga acggatcgag aggcggcacc gccccgggta      360
tctccatcga gcttggttaag gacaacaccg tcaaattcaa gcgtgtattg aactccttgg      420
ctgtattcac ggcgctcctga cggtcacatga gtccaccacg aaaaggactt cgttcggctg      480
gatggcagcc tgatggcctc tatctcgccg atcatttctt cgtcgatggc caaacgaccg      540
cgggtgtccg tgatgacaac gtcgttcccc ttgggtcttg cttcgggctt gcgtgtcggg      600
ctattctcgg accggctttt tgettgcctg gttcgett

```

(2) INFORMATION FOR SEQ ID NO:354

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 689 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...689

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:354

```

ccgggctcga tatcgacgct ctccgcacgc tagcaggcgg ggtaaaccgc tccgctctcc      60
ggagaatgct gctattgtga tcacacacta tcagcgttgc tcgagtacat caagccggac      120
ttcgtagacg tcctttacaa ggggcgctcg tcaagtcggg aggagccgag ctggctctca      180
cgctcgaaga aaaaggtagc actggatcaa ggaagagata ggagaataat cggatatgaa      240

```

ggtagagaac	aatatctgca	actcttccga	gagaatcgcg	aagcaataga	cagcactccc	300
cacgggtact	caatgagcaa	cgggagaagg	cgtcgatggc	tttgccctga	aggggttgcc	360
tcggtatggc	actgagaact	atcagcgtac	cgtttgtctg	aactattcgg	ttatgactac	420
ggagtaaacc	tgaatcgtgt	catttcccaa	tcagacagaa	agaagctttt	cattgtacgt	480
tgcccggtt	ggacacggat	ctttgctaca	ttgtcaatga	tgcatagcat	aacgaatggg	540
tcgcgtatcc	gaattgccgg	aaggagcatt	tgtcggcagt	ctgagcgtt	tgccctcagc	600
cattccggag	atagcagctt	cggtattatg	ctcaagcgtt	ggacccgata	acgatggcat	660
tcattgcatt	cagcacgatg	gttgctaag				689

(2) INFORMATION FOR SEQ ID NO:355

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1025 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1025

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:355

ctcgaatgac	gtactcgtgc	acgataagta	tgagcaggac	gtaacgctga	ccatctcctc	60
gcaatgatgg	gttacacgga	tgatagtatg	cctatcgccct	cggtgtcatc	cgcgacgtgg	120
aagcaccctg	ctacgacaga	gcggtgaagc	ccagatcgaa	gagatccagc	agaagaaccc	180
catacgcaag	ctccatatct	cctcatccaa	ggagacgttt	gggagatcaa	ataaagcagt	240
ttagagatta	gtacccaaac	gggtaggatt	cgacagaaac	ctttcgggga	ggattcgttt	300
cctaccggtt	tctcttttat	gggacgagtg	tagaccggtt	attgacaggg	gtcggagatt	360
gatcgagtat	aaaagcaggg	agccatgccg	aagattgcgg	tatggctccc	tgtcagtcag	420
attatttgtg	tctgaaatac	tccgatacga	gaggagggtc	agtctttggc	ttccatacag	480
tctcggagg	ttcgagattt	cgaatgcgcc	aatcctgogg	atatagattg	ttggcacgtt	540
gccgagattt	ttcaggaagc	cgagcggcct	tctgcggaac	gtggcgagac	gaagccgagc	600
ggcagatcgg	gcatgggtgg	cacagactgt	cgggccagta	ggagagagct	tcattctcgtg	660
aaaattccat	atcgaagaat	gagtggcgtc	catttccgtg	gacaaagcca	gagccggagc	720
cgggtacaaga	tctttccctt	ctgcateccc	actgtgatec	ctgctgtgtg	cagcctgatg	780
ccattgcctt	gagacattcg	accatttcga	gcacattggg	agtaagagca	tgccatactc	840
gtctcccatc	catcgccatt	cgtatttttc	aggggcatgt	acaagcattt	gataccatga	900
gggatatget	ttctgcgttt	ttcttttcc	tctcttgggt	tgcttatgcc	ttaccgatcc	960
tctctccggt	ttgcgaacga	gcagaagaaa	aatccttcac	ccgcaacttt	atgaggggaag	1020
aaacg						1025

(2) INFORMATION FOR SEQ ID NO:356

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1098 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1098

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:356

acatagaata	ccggccacag	cccaacggag	atcataagga	gtatgcacga	gcacagcccg	60
ccgcctaata	cgacaaagat	ggacaggatc	gtaaccattt	ggcggttacc	cttgtagcag	120
tgagaagctt	ggcaaagtaa	aaacctacgg	acggtagaat	ttccgggtcaa	ttatatatttc	180
cgtctccagt	gatttggaga	ggcttggtac	tccttgtcgt	tttcgttcat	gtctgagctg	240
ttcagggaag	ctgtagcctc	catcaagagt	caagacctca	ccattgcaat	aagcttggcg	300
agcaaaaata	aaaaagcttc	ggctacttca	tccggtgtcg	caagcgatgc	aaagcaacct	360
tattctcgat	atttcggcgt	atttcggccg	gttgttcttc	tgccattccg	tatctacaaa	420
tcccgggtgcc	acggcattca	ccggatgcca	taaggctcca	gatgcttcac	cagattgcgg	480
gtcagagcgt	tacagcggat	ttgctcactc	cataaggcag	agccatgccg	tgcggttctt	540
tcccatgagc	gatccggtaa	agatgataca	tccgttggtg	cgctcgatcg	cggcagaagg	600
cgttgatca	ggaaggtggg	gaaatggaca	ttggcaagaa	tacgcgctgc	cattcgtcga	660
tagtcatctc	ctcgaaaagg	gtgcggatgt	gatgccggca	ttcatgataa	gagcttgtag	720
agtaatatcc	ctctgtcaag	ggcttccgct	atcaggtcga	tacctttcgc	atcggtagca	780
tccgttgtag	cagctctacg	gatggagcgc	tctctgccaa	ttcgcccgcc	actctcgccg	840
cgtctcctga	tcatgtccgt	aggtaagaac	gagggagtat	ccctgcttgc	caagagacgg	900
gctactgcga	gaccgatccc	cttggttcct	ccgtaatcaa	cgcgtatccg	accgccataa	960
ttcctacatg	ttttggacag	cttgggcttg	tgctgacgct	cttcattcag	cgtcttgcca	1020
tagctatcgg	tatagtctcc	ttgattttgg	tagaggaaac	gcccgtcccg	taagggaata	1080
aaagacctga	acgccgag					1098

(2) INFORMATION FOR SEQ ID NO:357

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 927 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...927

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:357

tttgaaggtc	aggttggcca	gtaaaagcag	aattagaggc	aatgcccagc	ctcacggtag	60
aataccattg	ctgaagccgg	ctccacact	ggtcagtaga	cgagcatgaa	gataccccaa	120
aatacaccca	aggctgtggc	cagactggtc	tgcgattgct	gtagatcgta	tgccagatct	180
ctatccaacg	atctcttcga	aaaatctcat	agtctccttt	ctcctccttc	gttttagtttc	240

tcataccctcc	accgcgggga	ttcgtagcgc	tttgcgggcg	ggttggtatc	ctgcatggca	300
ccgcttacta	ccatgactat	cagagcta	agggcagtc	tcagtcgatg	ctcggatcgc	360
ggaagagtgt	cagcggttatt	ccttctacct	gttgctccc	acaccggtgg	tctgtaccca	420
atgcatagc	aactccatca	gccaacgcc	gccaccaagc	ctatcagtc	ggaaaacagt	480
gtgaccacta	cgcctctgtc	agaatcatgt	tgatgatagc	tcttggttg	gctcccagtc	540
tttgcgaaatg	cctatttcgc	gctgtctttc	attgacggtc	acttgcatat	attggccact	600
ccgataattc	cgatgacaag	ggtgctcaac	ccgataacca	aagaaaaaca	tccatgccat	660
tgaatatctt	gtccatcatt	tttatgccgt	caccggtgca	tcgacatagg	gcacttccat	720
atcggtagga	tcataccctt	gcggaangcc	agttggcgat	tgagtagtac	tttgagtctc	780
tcacttctct	cagttcgcac	agacggcagt	tcatgacagt	gtgcagtcca	gacgaacctt	840
tggcgaaaat	acctggatag	gtggcgaaaag	gattagttgg	gcgaatgcc	tgtcgccttg	900
caacgctaca	cgaggaacgg	atttggga				927

(2) INFORMATION FOR SEQ ID NO:358

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 622 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...622

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:358

cgttgatcga	tttcttgctg	ttcggtgcct	actatgcggg	ccagatctag	ccgatcaacc	60
catcagtgag	aaaggcattc	tcaatcgggt	ggagtacctt	cgctcgaagg	tttcgttttg	120
gccgttactc	ctttcaattt	caccagtttg	cttccaacct	gaatctggca	ccggccatga	180
tggggaatac	tactattgga	agccttccac	tacagctctt	catagcaact	acctccttat	240
gaaaacttcc	aagaggccgg	tttgcccgat	ggtgtggtca	atttccttcc	cggaagggta	300
gcttgatcgg	tcgggtagcc	acggcgaaac	aacacttggc	cggttccatt	ttaccgggtc	360
tactgctacg	ttcaacacgc	tgtggaagag	cacgcccggca	atatagatcg	ctatcgtggc	420
tatccccgta	tagtgggcga	acgggaggaa	agaacttcgt	gatggttcat	ccctcggtcg	480
aagcatgcga	gtggctacgg	ctcttgctgc	cggagctttc	gagtatcagg	gacaaaagtt	540
tcggctgcaa	gtcgcgcata	tatccctcgt	tctttgtggc	ccagcgtgaa	gaagtgatgg	600
gcgatatgct	cgacagtatc	aa				622

(2) INFORMATION FOR SEQ ID NO:359

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 587 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...587

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:359

tccccgcgga	agatttgcca	gcctatttgg	gtgtaaagca	tgtaatccct	gcgccaatgg	60
tacagacgca	ttgcaaatca	gtctgatggc	tttgggatga	aagtcggaga	tgagatcatt	120
gtgcccgaatt	tcacttatgc	agcaagtccg	aagctatagg	tttgtttagga	ttaacacctg	180
ttttcgctga	tgtagaccta	ttacatttaa	tcttacatct	aagggctgcg	aaaaagttct	240
gtccgcaaga	cgaaagcaat	cataccagta	cacctctttg	ggcagtcctg	cgattggagc	300
cgcttttggc	ctttgccaaag	cgaaacgatt	tgtttgttat	cgagacaatg	ctcaggcaat	360
gggaggggga	tatactatct	ccgatggatc	taccgaaaaa	caggaacaat	ggggcatata	420
ggctgtgctt	ccttctttcc	acgaagaatt	tgggttggtta	tggagacggt	ggtgctgtca	480
caacaaatga	gacgaattgg	caaagcgagt	gcgaatgata	gcgaaccatg	gccaaaagac	540
aaatacaaac	atgacattat	cggatgcaat	tcccgaactcg	atactat		587

(2) INFORMATION FOR SEQ ID NO:360

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 826 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...826

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:360

tcaaccggct	atcggttaagt	aggaatcaga	ttcagcatcc	gataaagagc	gagcgtaact	60
cccagaggaa	agtcgataat	cttghtaaccg	atggaaagag	gatgccca	caaagggcga	120
tcagggcctg	tccgcggaag	tagctgtcat	attcttgtcc	acttctttga	gtatgctcct	180
aacgcgaata	cgggtgtcgac	cgggaaaaga	ttgacaaatc	ctttgcccag	tttttcgaaa	240
tcgaaaggat	gaaaatgaag	tataaaacac	ctatgaagaa	gatcgctgta	tagcgaacaa	300
gctgatcgta	ccggagacga	gcttattgag	ctgtccgaat	atcccttgct	attctccatc	360
aatttctcgt	aagagatacc	tttgaacaga	tcttcatgct	gccactctct	gacagaaact	420
tgcggatcgg	agccggcagc	actgtagcaa	attctcatcg	atgcgggtact	gctggagcag	480
ggttattggt	tgcttacctc	ttctttctaca	gcaggaacca	aagagagaat	ggcaaaaaaa	540
tcaatgccga	tatgaaaacc	agcaccgtga	tcaccgacag	aaagcgaagc	gaaaatggag	600
ccgatactgg	acaaaacgaa	ccagaggcat	cagcacaagg	caagaatcca	agagagacaa	660
aaaggtataa	ggatgcctct	caagccatga	ctatggccat	aatgcctcca	accaacagga	720
tgatgaaaaa	caggctgcag	tacggtcgaa	cgtaaattcc	ctgtcaaaaa	aactttgcat	780
aagcgtgtcg	attagaatgt	gagtgagtcc	ggataccgaa	gatgtc		826

(2) INFORMATION FOR SEQ ID NO:361

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1222 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc feature
- (B) LOCATION 1...1222

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:361

```

gtcagctgct  tgccggaaaa  aagcccagta  cgcgtcggta  acgaaaaaac  caatgccgaa      60
gagtaatgcc  agaccgacat  attgggcaag  cgatcgttgg  cggcaaagcc  ttccactctc     120
atatcaagtc  cctgtacgaa  gaaaatatca  ggccgatatt  gaccatattg  gaaccgatgg     180
ctacaaccat  cggaaccgtg  tgtcctgcat  cccacatac  cagccgttga  agacatagac     240
gagcaggctg  cgggcgctcc  ccacagagcg  atgcggatat  attcgcgtgc  ctctgtccga     300
tggtctcctg  acccgaagcc  agcagatacc  cgaagcgttc  tgtagaggag  ctgctatgag     360
aagaagcagg  gctgcgacaa  ctgccatcgc  gagccacgtg  ccagatagcg  tgtgatggct     420
cgcacatcgc  tacgcccgaa  acctgtgccc  tgaatcccgt  agtcccata  cggaggaagg     480
cgaagagcca  aagacgaaat  tgaccacccc  cgaagccaca  gccactgccc  cgatagagtg     540
gccgtgtcca  tacgaccggc  cagccctaca  tccacgatgg  agaggagcgt  acggtaatgt     600
tggagatgat  attcgggaata  gccaaagcgca  ggatgcgctg  ttcatcttac  gccccgcgggt    660
cagtcgcatg  cggataggga  ggagtttcat  gaggttcggt  cagataggaa  aacagtcagg     720
ccgtgcactc  ttccaaatgt  ccagcaccag  ctgaaatccg  tcatcagacg  gatttgcccg     780
atcgggacat  ggtcgtgaat  accgctactg  ctgaaatccg  tcatcagacg  gatttgcccg     840
cagcctcttc  ggtcggagcc  agttcttgca  gccgctctcg  atggcaaagt  ccatgccgat     900
gatataatcg  aatcgttcga  aatcctcata  cccaccggac  gggagagcga  agtgagatcg     960
tagccccggc  gagcagcgtg  gcacgcattc  gggcatcggc  cttttcccc  tgatggtaat    1020
tgctcagtcg  gccgaatcga  tgtggaagcg  atcggcatgc  ccctgctctt  ctacatacag    1080
cgaaagacag  cctcggcaga  cggagagcga  cagatgttgc  cgagacaacg  aataggattt    1140
tatgtggctt  cataagcgga  ttatcgaagc  aaaggtgtcg  cttggtacgc  agtcgcaagc    1200
tgttggtcac  caccgaaata  ga

```

(2) INFORMATION FOR SEQ ID NO:362

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 488 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...488

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:362

```

cggcaaacat cgctccgggtt acgaatatgc ccagatcctg agtggagaca gggacatcat      60
tccatccgcc atcgcaatgg taatgaatgg atccggtaga cggctgcgtc gatctgtccg      120
ctgcgaagca tttccaagcg caaagggttt tattgacttc ggtcttggtt atctcgcttt      180
cgtccagtcc tgcggtttga taattcggtc ggtggtgtac tcaatgaccg tattgcgcga      240
tataccagat tctttccttt gagggtttcc aagctctcac ctgtataatc tttgacatta      300
ccagccggaa gtatccgtcg agacgcacat ccagttgcag atcatacctc ctgcttgctg      360
catggcttgc tcccgataaa tcgatgaccg taccttcaca ttgcccgaat ggaaagccgc      420
attcaccgtt cattgggcga atagaacttg acaatctcca ggtttcaagt cttgagtga      480
atcgtaaa

```

(2) INFORMATION FOR SEQ ID NO:363

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 725 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...725

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:363

```

gtatcggaag gccgcaaccg caccaaggca cagatcgaca gcatacgtca ggccgtgtat      60
ggctcggcga caaagctctt gcactcgggtt tggtaggatag cttggagggtt tggacacagc      120
tatcaaaccg gccgcgaagc tggctcactc ggtggcaact acagcataga gtatggcaag      180
accaagcgca acttctcgaa gagttgctct cctcatcagc agcggatatg aagtctgcca      240
tcctgggtacc attctctccg atccggaaat agaagttctg cgcgaactcc gctcatgccg      300
ccccgtcctt cgggcataca ggcacgtctc ccctattact tcagccgtac tgataaatga      360
gacaaccgta attgctgaag agatggatgc gcccgatatca acaagtggct caaacccgtt      420
tccgcctctt acggggtggg ctgagggttg gcaactacct cttcgacaag aacgtcctga      480
tttcgaactc ttcgacatcc ctatcgtctg tgtaggcaat atcaccatcg gcggcaccgt      540
aagacacccc acgtagaata cctgattcgg ctctcgcac cagcgtatgt gtagcagtgg      600
ttagccgcgg ctataagcgg aaaaccaaag ggatgatgtt gcaaccgaag gatcgactgc      660
atgggatata ggagacgaac ctcgtcgac aaacgaaaat atccggacct gaccgtcatc      720
gtgga

```

(2) INFORMATION FOR SEQ ID NO:364

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 656 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...656

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:364

cccagaaaaa	agaatctgtc	ggtagagata	tgtactgaaa	tagagtgtgc	agttgtgagg	60
atagccatca	aaagccctta	ttaatcgga	tagtccagtc	ttataggtct	tataagattt	120
attaattcat	tggagagaat	cagatatgca	ctgtattgaa	gtccgcttga	cttttttcaa	180
aatctcctat	ctcatatatg	caactcctct	accattatac	ccaaggatgt	atttatcgtc	240
taattttattg	cctgagaata	gtctttaatc	gcttttttat	accatccttt	cttaaataatg	300
catttcctct	accatgatac	gcaggggCGT	atttatcgtc	taatctattg	cctgagaata	360
gtctttaatc	gcttcctcat	atgacccctt	ctacaatatg	catttcctct	accataatac	420
gcagggcgga	atttaccgtc	tattctattg	cctgagaata	gtctttaatc	gcttttttat	480
accatccttt	ttagaatatg	catttcctct	accatgatac	gcaggggCGT	atttatcggt	540
aattctattg	ccttagaata	gtctttaatc	gcttcctcat	acgaccttc	tcacaatatg	600
caactcctat	accattatac	ccaagggtga	tttatcgcta	attctattgc	ctggag	656

(2) INFORMATION FOR SEQ ID NO:365

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 890 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...890

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:365

cgccgggtgaa	agctgtgata	agcgaagcag	ccaagccgaa	tggagcgata	tcttgatgtt	60
tttgagagca	aagtccttgt	gtttgtcatc	ctttcgca	ggtagatgcc	acatacgccc	120
aaagcaaata	cggatccgag	agtccagagg	aagagatcgt	gtgccagaac	ttattgatcg	180
cagtgggaaga	gaatacaaaag	cccagaaaatc	cgtcatttcg	tttgcgcatc	gtatcggggt	240
tgaagtcatt	cctaccggct	cctgcatcca	tgcattggcg	ataagaatcc	atacgctgac	300
aagctggctc	cgatgatggg	cagccatgtg	gcacttaggt	gaaacctttg	ctcaccttgt	360
tccagccaaa	gaacataacg	gcaataaaaag	tacctccatg	aagaaagcca	aaataccttc	420
gatggccaat	ggcgctccga	aatatcgccc	acaaagagac	tgtaattaga	ccagttggta	480
ccgaactcga	ttcgagaatg	gattcctgtg	gccacaccga	tcgcaaagtt	gataccgaaa	540

gcttctgcc	gaactgagca	taacgcttcc	actccggttt	gccattgcat	aatagatggt	600
ctccacgata	gccatgatga	cacccaatcc	cagtgtcgcg	gaacaaacag	ccagtgatac	660
atggctgtaa	gagcaaactg	tgacgggacc	agcttactaa	ggcatctaaa	ttcataatca	720
tacgcttata	tcttatgttt	taggggttta	ttccacgttt	gataaagttc	ctgctgcaca	780
tattggattt	gcagtgctgt	cgctaccoga	cctgttgctt	tcagaaagtt	cggaagaaga	840
atcctttcag	gatggcgaac	atgatgaata	gtttgatgag	gaaatagccc		890

(2) INFORMATION FOR SEQ ID NO:366

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 508 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...508

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:366

gcgcgcttgg	atctcttcat	ggtcagctct	ctggacaagg	gcggtattggt	tcgggtggta	60
ttttctctat	tgctttcgat	atggtagcgg	tggtggaata	ccctccagat	ccctgctcag	120
cgtctcttct	cccttgatgg	ccgacgcatg	aaacggaacg	atctgggtcaa	agccgacgaa	180
ctcttcaagc	gcgtctgctg	catcagcttc	tttccgggtg	ccttatcttc	ttgcttattt	240
gggtcaatat	cgacagcctc	ttctccatcc	tcccgaacgg	tcacctctat	gccgcggcaa	300
atatgtcggt	ttctatttgg	gaatcgctaa	gatgatcgaa	atccgctgaa	ctacggcaat	360
ccgatcggtg	gctgttccaa	gtattatcac	tgaatcttta	ctatactttt	cctcgtcacc	420
cattctggcc	cgtgctcacc	atctgggtgg	tgatcctggg	tttgggaatc	aacgggaccg	480
ccatggcacg	tcttgaccac	gctgcttg				508

(2) INFORMATION FOR SEQ ID NO:367

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 506 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...506

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:367

cgctttctcc	cgtccgcgtg	ccaatggtgt	gacgcgtatc	gacctgcgaa	caacgatggc	60
ttggtaaagt	tccgattgac	caatggtaaa	tgcgacatgt	tattgccaat	tgcgggtggac	120
gtgccattcg	tttccatgaa	tccgtggtcg	tccttcgggt	cgtacagcca	tgaggagtaa	180
gggaatgacg	ctcgacatga	tggtcaggac	gaagtantag	gaatgatctc	tatcaaagca	240
tccgnagaag	agaccattct	ggtagtaagt	gaaaagggat	acggcaagcg	ttctatatcg	300
accgactatc	gtattaccaa	tcgcggtggt	aaaggggtga	agaactgaat	atcaccgaga	360
agaccggaaa	gctggtcgat	attcgagccg	ttccgatgcc	aacgacctta	tgatcatcaa	420
taagagcggt	gtcgccatcc	ggtaaaagtg	gctgatctga	gcattatcgg	tcgagctaca	480
caaggtgtta	gctcattgat	ttgtcc				506

(2) INFORMATION FOR SEQ ID NO:368

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 539 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...539

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:368

cccctctaac	gatgatgccc	tgaaggctat	cgaactgatc	gtaggcacgt	gtgccaggct	60
atcaacgaag	gtctgatgga	gcgtaaggcc	gaaaagccga	agaggaggag	acggaagaag	120
cagctccccg	tcgcgaacgt	cgcgctcctc	aggagctcgt	cgtctcgtc	agaatgagaa	180
cgaagctacg	gcagaactgc	cacagaggta	gcagaagctc	cggaagccga	agaggcgga	240
taaagcgaca	catggaatta	tgagctatgg	gttataatcc	atgagtggcc	tcagatgcag	300
gttccaaact	caggggttat	gactcatggc	tcataacttt	tttcagaact	aataacccat	360
tcattataga	acaaaccaat	ggctgtaaca	atcaagacat	tgccaagctg	cgtaagatga	420
agcggtgccc	gcatgatgga	cgtaagaatg	cgtcgaaga	gtccaacaac	cgactttcga	480
gaaagccatg	gaatcattcg	caagaaggac	cagccagtaa	gcttgccaag	ccgttcgga	539

(2) INFORMATION FOR SEQ ID NO:369

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 513 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...513

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:369

```

ctcaccaatt tttatttcac ctatattata gtggctgctcg atgttaccca agcaaaaatc      60
gtatataagc cgtctttctc caaagggatc agccattctt tgcagctgac aactggacat      120
cctcaaacac attggcactg cgaaggaaacc atccttatcg aaagcataaa cgttcaatcg      180
ggcaacttcc gcaggaaga aggattttcg gcacactcag tctgagaata gaagttgaca      240
tataccctcg aggacaatca tcgtaattgt cataaatcat cttatcgcac gaagcaagcc      300
acccacagc gccattattg ccggcaaaga aataataagt ctggaatatc catatgcttc      360
cgtttgttca ttgttttaaa aaatatagag gggggagaac ggtgggaacc gaaatccac      420
cctcaaaaag aaaattttac atagctaatt agagatcaac ctcataggaa tgaactttcc      480
aaggcaaaac gtaacctaac cgacatgaac gtt                                     513

```

(2) INFORMATION FOR SEQ ID NO:370

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 586 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...586

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:370

```

cagaccgata cctacggcac cgaagctgcg agctatctcg gcatcggtgag agtatcggca      60
ttcgtagcaa ctttcagctt ggcatactta tcggccaagc catcagatcg gcgaaatctt      120
gatccatttc ggcggttttc gtctccactg tccttcgtat atctcaccgg tagaaccggt      180
gatggagatg tagtcgcttc tttgaagagg ggttccatcg atctctacgg tacgtgcctt      240
atagtgatgt tcaatgcacc tgctcccgat acgcagcatt tgcccatacc tctgccacta      300
cggcagcatg cgaagtcata cctccgcgag ccgtcaggat acctcggcgg cagacatacc      360
ggccaagtct tcgggcgaag tctcgatacg cacatcacca cacgcttgcc atcctctttc      420
cactgagcgg catcgctcggc gagaaaacga tctgacccgt agcggcaccc ggccaagcag      480
gcaagccctt gtcagtacac gtgctctaag gagagcagac ttgtcgaaaa tggggtggac      540
aattcgtcca gcttggtagg ttcgacgcgc ataagggtct cttcct                                     586

```

(2) INFORMATION FOR SEQ ID NO:371

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1949 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1949

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:371

acgtccataa	tgggtgctcac	tgttggtgacc	tcccattatc	cgcccgaatc	atccaagaga	60
gggtgaagca	cagccctgaa	gaggctgtcc	ttgtgctcaa	gtagttgtat	atattgctca	120
cgggctactc	ccgattcgcg	agcgatgttc	ggagagaagc	atctcggaag	ccattgacca	180
taaattcctc	tcgtgcgctc	gcaagattct	ggcacgagca	tccatctcgt	tttttgcctt	240
cgctcattga	tctcattatt	ggtacatgac	aaaggaacaa	agcctgaaca	gtgtcacaa	300
cccgtttttt	aggtaaaaatc	gagcatgaaa	gcggctgaaa	gctacaacaa	atcggcaaaa	360
cggctgttca	taccgatctg	tacaccaatc	attctgatgt	gtacgggaaa	aaagttgata	420
ctcagaaagg	tcaaaaaaatc	ataatcgtgt	cgaacattt	gaccgatcc	gagcgtcttc	480
acattttgag	ctggtgcaca	ataacctccc	acctcctcat	atcgatcaag	acagacacag	540
cattgatttg	acgaagaaa	gagagcttca	tgcgatctct	ctgcaaaactc	aagtaatctg	600
aaaaacactt	aagaatcagc	tctgcggcaa	aagacttaat	aaaagtccta	taaaatagtt	660
gcaaatagct	gatagttagc	gcattgtggg	agcagaatca	agctgacaat	cgcgtcctgc	720
atcgtgcagg	aagcagaatc	agccgacaat	cgcgtcctgc	atcgtgcagg	aagctagaat	780
caacgacaat	cgcgtcctgc	atcgtgcagg	aagcaagaat	cagctgacaa	tcggtcctgc	840
atcgtgcagg	gagcaagaat	cagctgacaa	tcggtcctgc	cacgtgcagg	gagcaagaat	900
cagctgacaa	tcggtcctgc	catcgtgcag	gagcaagaaa	cagccgacaa	tcgtttctta	960
tttctcgcct	atttgacgag	aaaggagtac	ttctctaattg	gaaacttggg	gaaatttctg	1020
tttgctcgag	tccatatacc	ggaggtttga	tctttcccaa	aggcactaag	aatcagcttg	1080
cagcaaaaaga	gttcaatgaa	actcccattg	aacagtctct	accggctttg	atcgtcgatt	1140
ttttttctcc	gctttttcgc	tgatcgggca	gaacgaatct	atgacctcgt	tcataatcgg	1200
cgtatatctg	cgcgaacgat	gcttgctgaa	gagacagatg	ctatagcttc	tgtttcttgg	1260
gtagcaacgg	tcagctatct	cttcggaac	gctggcggat	cgcattccaca	gaggataaga	1320
aacctcctgc	cgcattgcgat	cgatcgggtc	gaaaagattg	agctgatagg	ccccgctacc	1380
aagtcggaca	agatcacccc	tgctgtttg	tagggcagat	tggtcgataa	atctcttgta	1440
gcagggtgcg	aatctttggg	atcagttctg	agggtcagaa	gtagctacgg	gaaggagcat	1500
ctcattccgg	ccggaatagc	gttctcctga	tcaaatacgg	tacagcttat	aaagatactc	1560
aaacggcggc	cctgctcttt	tcttcacgta	tcttcgtaca	gcaactatcg	gcgaaaaagc	1620
caaatgcctg	agaagggagt	caaaatctcg	gcattggatg	ccgaaaagcg	cgtggtgcag	1680
acactttggc	gaggctgtgg	caatttcatt	tctttcaggc	ttcgccctta	agctcctgcc	1740
atgtcctgac	gcccgaagtg	ccggcaaacg	atatacccca	ccttctctca	tcgaagcaaa	1800
gtcggctgcc	gtatgatacc	ataatagtat	agcttgccag	atagtctgcg	ccctattccc	1860
caacatcgct	tacatcgaac	gtttgcagag	cctttctcct	cttttcttcg	ggtctatggc	1920
gcatacgccc	ttgtaaccgg	catacctct				1949

(2) INFORMATION FOR SEQ ID NO:372

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 671 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...671

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:372

```

cggtttttct tttttgcaga aatgcaatgt caccaagttt aaagggtcag tcgctgcaca      60
tcatatacag ctatattaat tccatggcca gtgccggata aaaatcattc agctcttggt      120
ttaaaatctc ggcataggcc aaattttatt attagttgtg tgccttagca actttgattt      180
actccctttt tggaagggtc tatctgtccg aaagagagtc cgttataata attctatctt      240
tttctttaaa tcatcgagaa gaatggtatt aatattatct tcaagctcca aatatcccca      300
aaagatatatt gggattgctt cttaataaca ctatccaata atgaataatt gtttgctttt      360
tttgctcggg gaagttttct atgatgaaag gatggtgaat aattcttgat gtttaacaac      420
atctctctca ataccccatg agaagttgtc ataaaagcat aatattgagc aaatgatgaa      480
tttaaaaatg gcaagtagtt tcaaaatatt ttcatacagat ttttcggaaa taatacctag      540
attcccttaa aataagaaca tcgtaatcca aaaaagnagc ccggagtttt ttctggactc      600
ctcattcaat aatagtgagg agccctatat gcatcaaata tcctaattctt ctgaaaaaagg      660
aattgtatct a                                     671

```

(2) INFORMATION FOR SEQ ID NO:373

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 542 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...542

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:373

```

ctgcaaggcc gtatctatgg tacgaaggag ccgacgtgtg tcccatggct gcctatgaag      60
tcgaaagctc caagcctcat tccctccact gccagtggtg cgaagcccaa gccgtcatca      120
gtatgacagg gcaggaagtg aatatctcat cttctccagt agttccaatc cttccctgcc      180
ggaggctcga agggagaatt catatccatc agaatacacag ccggcttaca gccgccatca      240
ggattcgcat tatggacaaa gcttcgtcgg gactgttggc tataacggga ttatgcccg      300
tcgcttgagc accagacgca gtgcggcaca gactgccaca tcacgtctac gacccaaaata      360
tcgatcagtt tttccattgc acggtaaaag taaaattggc gttgaagcac ggtcttttct      420
tgcaaatgtc tcaatcgaga cgttgacagg gattttcatt gaactctttt tccgcagagc      480
tgattctttg gccttcgtga aagggtaaac ctccaggaca tgagcaccga gcaaatagaa      540
tt                                     542

```

(2) INFORMATION FOR SEQ ID NO:374

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 497 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...497

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:374

```

ggtttcggcc gacatcggac gggggaaagt ggatttcagc ttgtttctca ggaatccggt      60
agtacggatg ttgtatctca gatattcgat acagaaaaat gtcctcttat ttcttccaac      120
tcaaggaatt cggcgaaaag atgggagggg agtaccgcga ggaggatggt tcgaacagct      180
acttcggatc cccggatcat tcagatagat gaagataaag aagaagaaat tccagaagat      240
gaatggctgt cgtaattgaa acttgtcgga gagcccttga tcagctaata ggatccgcga      300
gcaggagggt gctatgctgg agcagggtgt cacggagaaa atactaatat ctcttctttg      360
cttctgcaaa tcgaacagta tgaaccgat agatccaacg aatcaaagag cggatagaag      420
agaacctaac caaaatatca ggaaagactt ccaccagaac ngattcgaac caagagatga      480
tttattatat gaaagggt

```

(2) INFORMATION FOR SEQ ID NO:375

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 518 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...518

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:375

```

gatcgaaatg tgaggctaaa ttgtgcagat actcctccag caggttatag catcctcgtc      60
gatgtggaag accttgccctc ccagattcat cgtgagcggt ttttcatctt gtttttccgt      120
taatagcaga ttcttcttcg ggcttaaata gcgcaccaat agttgcaatg atttggtgcc      180
gttgaattcg ttctctctat cgtgtagcaa agacgaaatg agcccgtttt tgatctcatc      240
gcaataccgg cctgattaaa cgcaatccca ctcaccggat ggcgttcgcc cgatccactc      300
tcacatctat cttcaggtgt tcggaagctt ttctacagc cctctaccac cggcatcata      360

```

```

cagttgtcgg gatataaaga ccggcgttga gtttcggggc cgaatggccc catccgcttg      420
aggttgtcga gaagtttgta atgacctctt cgatggatat ttcggcatct acatctatct      480
gtggcaccaa agttccggcg atacagcctc ttcggcat                                518

```

(2) INFORMATION FOR SEQ ID NO:376

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 558 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...558

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:376

```

gccacgtgat ccaaataccc acggacgggg aaaatgagat agagatagcc gtttcgcgaa      60
tgcggtcgaa tgcgaagtgc tggatgatgt gtatcgtatc ttgagcagaa cggcggcaaa     120
agccgagagg ataccgatga tgaggctaag atgatgagaa aaagcctttc gtttatgtgc     180
ctttcgcgcc aaaggagaag tgcaagaacc acccgtagcg actcgtttcc ttatccttca     240
tttcccaatc ctttaaaaaat cgtttggaac gtatataaca gtacttctat atccgcctga     300
ggctcatatt ctcgtagtac agaaaatcgt attgcaggcg ttcagcattt catccggagt     360
ggaagcatag ccgtagcgta ccatgcccca ggggtgatgc ccggacggac attgtgcagc     420
aggtagtagt agggagcacg cccacgagct gccggatgta gaaagcccgt tcggggcgcg     480
gccccacgaa ctcatatcgc cccgaagcac attccagaac tgaggcaatt cgtccatccg     540
tatttgcgca agatgcgc

```

(2) INFORMATION FOR SEQ ID NO:377

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 646 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...646

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:377

tggttcggac	gacctttttg	gttttcoctca	cttattccgt	cgtacagctt	cgttctcgt	60
gatgcaggac	ggtcgggtag	agatgggaga	cgggctgaca	ttctctat	cgggtggaat	120
ctgatcttcc	tcattgttcag	ctacctgtog	tctatctgat	ggagcgtgct	ttcggctacg	180
tttccaatat	cagtttggtg	agctgagcga	cgtcaatacg	ccgctgctca	gtcagctctt	240
cgggaagtgn	cgcggggcac	ctttcagcat	tcgatccaag	tgtccatcct	cgtcggagg	300
cagccaccaa	gatcggagca	gatgtacagc	ttgtacgcac	cgggctctct	atcatgatat	360
aggaaaaatg	aagaacccat	cttatttcac	aggaatcagg	gagcagagaa	tccgcactcc	420
aaattgcctt	ttgacgagag	tctcgcatta	tcattcgtca	tgtgaccgat	ggtattgcct	480
tggcgcagaa	caccgtttgc	cggactccgt	tatcgatttt	atccggacgc	atcacggacg	540
ggtaagacca	aatacttcta	taattcctat	tgcaatcagt	atcccgacaa	gaagtggatc	600
cggagttgtc	acttatcccg	ggcccgaatc	cattcaacaa	ggagac		646

(2) INFORMATION FOR SEQ ID NO:378

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 710 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...710

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:378

agccgacgta	cccttaacct	atttccacac	cgaccacaaa	gatctgatct	gtccagccct	60
gactatgcta	ataatatcac	cacatacatc	aatgccgaaa	ggctcgtatg	agcggtatcg	120
aggccctttt	gtcttatgac	ttcggcacct	ctttgccaac	aagttctctc	tccgcgcatt	180
tgcgaatgcc	acgatctgct	caattccgag	atgaagaaaa	gccagaccga	tgccccttgg	240
agcgaatgta	ctacgttcgc	aagcagaaca	tcaccttcgg	tatcgaatat	cgtgcaaaga	300
aggacttgaa	gtgatgctca	acggctcgctt	catgggacgc	aggtcgagca	aaactggtat	360
gcttactacc	ccgaagttcg	ccccgaactc	cacaactgct	tgcagcagaa	gagcctgaat	420
tggctgctca	gggactgctc	ctcatccgca	agcaatgggtg	ttcaatgcct	ctgcttacta	480
ccacatgaac	agtatctcac	cttcgggtgtg	aacttgaaca	acatcttgga	tgagctttaa	540
cggagaaaaga	cggctaccac	atgcccggac	gtaacatcat	gggtaaggta	tggtaactt	600
ctaattctct	ttcccagagag	cagatataaa	agggagcgggt	ctccctgcat	aatcctcaca	660
gagcaaagcg	gatattcctc	tcatacgaga	agcgggtatc	cgttttctga		710

(2) INFORMATION FOR SEQ ID NO:379

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 789 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...789

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:379

```

ggactttaga agaaacactg taattttaat cacgaatcag acactcttta gtgtcaaact      60
ttttcagtag acgtcacttc ctttttaggc aatcaaaaca ttcgataaat gaaaaccctg      120
ataacaaatc gtttcctcct gcttttttct ttttgcttac tgctgtttct gggcaggggc      180
aagaagtcta ctatccgggt ctgtggtttt tcctgccgat gccacttttg aacagaaggt      240
ggagaggcgg caaaggtagt ccctacccta caacagctgg cttggcagca gatgagctga      300
cggcatttct gcacttcggc atcaatactt ttaccgacag tgatggggtg atgggaaaga      360
agatccggca ctcttcaacc cggtggaact ggtgctcggc aatgggtacg aatactgcac      420
gaagcgggct ttcgcatggt atccttacgg ccaagcacca cgatggtttt tgtctctggc      480
ctacagccac acgcgccatt cggtggtctt atctccgtgg cgagagggca aaggcgatgg      540
gtgaaagaag tccgagcagc gtgcgaagag tatggtatga agttcggctt tatctgtctc      600
cttgggatcg caatgcggag tgctatggcg attcgcacgt tacaatcggg tttttgtcag      660
tcagcttacc gaactgctca ctacttgga gaagtaccac gaagtatggt tcgatggagc      720
caatggcgaa gggccaacgg caagcgacag gaatatgaat gggagacatt ctacgacacc      780
atcccgaact

```

(2) INFORMATION FOR SEQ ID NO:380

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 871 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...871

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:380

```

cgactttaga ggatccccag cattcctgcg caatatggta cgtgccatat cggcacgctc      60
ttccatgtgg ggacgggcaa gctatccatc acagacttcg ggacatcatt gaatcgcagg      120
atcgcagcgg tgcgggtctt tcggctcggc tcatgcccto tatctggaga gggtagttta      180
cccgctggat ctgttttctg acagcacgcg cgtatcttcg atacgaaggc agctttccat      240
cgggcttact tttttctctg tcgcttcgcc ggcattccgt tcgcttctgt caattctatt      300
ctttgactga ctttttatta gtacacctca gatggctttg cgcaaattgt tataatacac      360
atggagatgt acggttgcca ttatatcccg gatgcgtcat tcttcggcga ggcgggcttc      420
ttcgaacttt gctttcatcg tggattgcct cgtgtcagtt tcttgatggt gagggcttca      480
gccttgctgt cgcaaggcgg aggttggtact cgtgccgac caaggcttct ttgattttat      540
caagtgtgtg atggacttgt ctatctcgtc gatagccgtt ttgaatcgtc gctggcaagg      600
cgatagtttt taccgaatct ttcccgaaaa tcttcgactg actctcgaaa ttcgaaacat      660

```

```

cgatggattg tttctgcgcg atggcagctg ctgtctgtac tccagaccct ttttggacgt      720
ctgcaccagg agggatatcat cggaatgaaa aactgcggac gaatcacata catcttatcg      780
tategtagga catatccaca ataccgccgt tgtacaactc gttgtccggc tccgcagaga      840
gacgagtacg gcaaattcgc aacctttgac c                                     871

```

(2) INFORMATION FOR SEQ ID NO:381

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 239 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...239
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:381

```

acgctgtcgt ttttatttca attgcaccaa acaggaatta aaaccgcctt atgctcgacg      60
acgcagacga atcggatcat ttcaattgca ccatacagaa ttaaaacgct ttggctgcga      120
attcccttac gggccaatcg aagatttaat tgcaccatac aggaattaaa atgtatccat      180
tatactactc caaaactga caactagttt cgggggttatt tggcttgttt tttaggtat      239

```

(2) INFORMATION FOR SEQ ID NO:382

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 726 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...726
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:382

```

cgtggacgta gctctcctct cgggaggtat atacgaagcc ttggtaacgc tgtaggcggt      60
ctcgttgctg gtatcgtaac gctttttgcc tacaactact cgtagctcag gtggataagg      120
tcgtcaataa gatggaaacc aagactctga gtttatggat ctcccttaacg aacctatcaa      180
aaaatgagtc tgaaactaaa accaagggtca cagaagtttt tagcatggct tctatgaccg      240

```

acgtgttttc	ctgctgetca	tettettcat	ggtgaccagt	acgtcatcg	taccaatgcg	300
ctacgcgtat	ctcttcctc	tgccaataaa	cagcctgccc	ccgagctcct	ttggcacgga	360
tcaccatttc	agaagatatg	cgctatttcg	cccttttggg	caggacaaag	ggcatgaggt	420
cgctttcgag	gagatacttc	cctcttgctt	caggagcaaa	gtcgcaatcc	cgaaatgtac	480
gtagccatat	tgccgacgag	aatgtcccgt	atcgtgagat	cgtgaagggt	ttgagtatgc	540
cggggagaac	aagatgaaag	tggtgttggc	caccaaagcc	caaagtaaaa	gtaagttcat	600
gcaacaagag	aaagtcaaac	gccaatgccg	tgccataccc	gtatcgggtg	ggggcacatg	660
tcgcaactgat	caccctcttg	tcgtgcgcgt	cttcgtgctg	gttcgcgcgc	aagaaccgga	720
agaact						726

(2) INFORMATION FOR SEQ ID NO:383

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 697 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...697

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:383

cggacttccg	ctaattgtttt	ggagaaaacg	gccggatttt	ttacaaccaa	gagagtgcga	60
tagcctgatt	atcatcgtaa	tgttccagac	tgtccatctc	tctttctctt	tggccacact	120
gatcttgaaa	atagctcgta	cgatcagatg	gacgcaataa	tccccaccac	tccgagcgga	180
taagccacag	cataacgagt	gtgatagtcg	gatcgccggt	tcccgttaga	tcatggaatg	240
tctgccggca	gtccccaggg	ccggtgtgtt	cgtgacggca	ccggacagaa	ttccaccatt	300
gtggacatgg	atatgcctgt	cacgaagtgc	agaatcaccg	ttgcagtacc	cccagaaaga	360
cgacgcccat	agccagtagg	ttcaaggtaa	gcccccttg	cgaagagagg	agaaaaaacc	420
cgggcccact	tgcatcccca	cgagtaaacg	aataggatca	gtccgaactc	tttgaagaaa	480
tgatgtacgt	aggatgcaga	ttcatgccga	aatgtcctaa	gactattccg	caaaaagaag	540
aaagtaacct	ccaaagaaat	tccgaagatc	tttatctttc	ccaaccaatc	cctaaggcaa	600
tcgttacggc	gaccaagaga	atggagtgcc	cactcctcac	cgaagcaag	tcattaagcc	660
attgcatatt	catccaaaca	gcttatgtag	tcaatag			697

(2) INFORMATION FOR SEQ ID NO:384

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 874 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...874

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:384

```

ccccggcggc ggtcaatcgt ccgacccttg tcttgagtca caacaagact tggcagcaca      60
gctatacggg gagttcaaag ccttcttccc cgagaatggg tggagtattt cgtcagctac      120
tacgactact atcagcccga ggcctactcc ccgtcacaga cacctatatc gaaaaggaca      180
tggccatcaa cgcggaatcg aaaaactgcg attgagggcc acggcttcgc tcctgtcagg      240
gcggaagaat gtgcttggtg tcagctccgt atcctgtctc tacggtatgg ccaacctgaa      300
gctttttccg aaaaggtgat cagcctgcac acgggacaaa gggagacagg gatcatttta      360
tccgcctgct ggtagagagc tactacacga acataaagta gagttcgaga gcggcaactt      420
ccgtgtcaaa ggcgacagcg tgacatattc cccgccgtag aaggttatga cggcgtggca      480
tacagggtgg gttttgggat ggagaggtcg agcggctgag taccttcgat ccgcgaacgg      540
acgggaatac ggcctgctgt cggagctgaa gatatatccg gccaatcttt cgtgacgact      600
aaggagcagg tggatcgggc agtagggaaa atcgatggga tctgggcgca caggtcgatt      660
ttctgaaaga aatcgcaaaa ccatataagc caaacgcttg tatgagcggg tcacgtatga      720
cttggaatg atccggagtt gggttattgt tccggtatta gagaactatt cgcgctactt      780
cgacgcccggt gacgcgggcg aacgtccttt ctgtctgttg gattatttcc cggggatttc      840
ctgttggtca tagacgaaag ccatgtaacg atac                                     874

```

(2) INFORMATION FOR SEQ ID NO:385

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 630 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...630

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:385

```

ccgacctttg tttttgcgtg aagtgggatt ttcactacgt cgcccgtcga atctttgcga      60
cgagcggaaa agttcttata tccgcctttt tccccccgc atagtcttcc ttggtatccg      120
catactctac atggatgcgg cgaccatcac ttcgtaccga ttgagggttt ctactacgtt      180
cttggttcg aactcgctac atcgaagaaa gcgaatcggg gcatcaggtc gatcccgccc      240
cgatatgaca cgccccggga tacaacggtt gatcagctcg atcagtcggt tgggaacatt      300
tgatccatct tgccaaaatt gatgaacaga cgggtcatcc cttttctgct tcgccggctc      360
ctcgttttcg gtttttacga tctcccgaaa cccgtctttt tttctctcga ccacttcttc      420
cacgtcttcg gcacgttggt atagtcgagc atgcgattga actccaatgc cattaccgga      480
cgaatcaatt gtctttttca atccattcga gcttttgntc acttcgttca agacagagtg      540
atggccggtt tggtctctat atccacacgt tctatacgat cggccagatg aacagttgct      600
tttcgcatat ctctgcttcc ggaaggggatg                                     630

```

(2) INFORMATION FOR SEQ ID NO:386

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 697 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...697

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:386

```

ctgacatccg ctggaaccat ggacacctcg tctatgataa tcagatcgaa cttcggatca      60
gtttottgtg ttcgttcgtg tagcgaaaca catcgaaccc cgtctgtcac gagtactcaa      120
atcgggagtcg ttcgggcgaa tcgggcgaga ggcagtttga aaaacgagtg gagcgtctgc      180
cctccgacat tcagtgcgca aggnccggta ggcgcaagca cgacaaactt cttatgcgtc      240
gtagccagat atgccgaagc agtgtggact taccggttcc ggcccttgccg gtcagaagag      300
gctttggtct gtgcgttcga tcaggetgag cacatagccc atccctcatt ggcaaggctc      360
attgcggaaca ggccctcctc tctctttttt gtttgcgacg aggcattgcgc tcagggggcgt      420
ttgtatcggg ctttgacttt cgtttggccg gtttgccttc gttgtggaag cgatctacgg      480
ccgtcaccaca taagtataat cggctgaagc atgggaagtc gggaaggcga atgctgtttc      540
gggagtaatc acccaaatgt ttccagcttt gntggatcgt ttcttcatcc atgacggaag      600
gcatagacca cgaagtagga agctttgaca gggctggatc atcctttcag cagccnaatc      660
aggtgaaaac tgatggcaac caagcggatg cagcctt                                697

```

(2) INFORMATION FOR SEQ ID NO:387

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 633 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...633

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:387

```

gacctgcgat tgagaaaagg ctgtagaatc aattcggggg cttaataaaa aggagcgaga      60
aaaggcttcg gatattaggt ttagtcagaa aaatcttttt tatctttgct gctttcatcg      120

```

accgattata	tcagaataaa	aacaaatatt	gctttccaag	ccctgcaagc	catctctccg	180
atagatggcc	ggtatccaac	aaagtagaag	tacttagtcg	ctatttttca	gaaggatctc	240
taattgctat	cgtgtaaaa	tggaggtgga	gtatttcatc	gctctttgca	atgattgcct	300
tcgctgaaa	atgtgtgcc	tccatcttta	gaggaagagt	tgcccgtata	taccaagact	360
ttagcgagaa	ggatgccgta	ccgtgtaaa	gaatagaggc	ggtaacgaat	catgacgtca	420
aggctgtgga	gtatttcctc	aagagcggtt	cgaggccatg	gggatacgag	atgccaaaga	480
atttatccat	tcggctctgac	ctcgcaggat	gtaaacaata	cggctttccc	gatgatgatc	540
gcgaggcaat	gaccgaggtt	tacttgcccc	ctttacagga	gctgggtggc	agcttcatgc	600
ttatgccctt	cagtggaaa	atgtcccgat	gct			633

(2) INFORMATION FOR SEQ ID NO:388

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 577 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...577

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:388

ctcagaaata	tccgtctacc	atcgtccagt	atatcagctc	tcaggtagtc	cgagtgtctca	60
agacatggca	aatgcagaag	tggagatgca	gaaggtaacca	ccgagatgca	acagcaaagc	120
gatgtggaag	ctcttgcccc	caactatcgg	acaagttcgt	atctccttct	ttcctgactt	180
cggcggaact	cgatcgatga	acctcgcggt	aagcattacc	gaatttatca	agactgcgac	240
accggcgaag	tcaatatccc	gatgttggag	aataaccact	attctttggt	aaagtgggtg	300
ctaaaaagtc	cggattcgaa	tcgtcfaatg	tggcaatcat	tgccctggact	ccgccaatct	360
gtctaaggcc	gacagccttt	gcaacgcctt	gatgaggggg	gcgacttcgc	tgctgcagct	420
cgcacgttca	gcgagatccc	tcctcttggt	agacaggcgg	tgtactcacg	ttccccaac	480
cagtttacac	aaatgccccg	attagcaatt	attaccagaa	ggctatgggc	tcagcagctg	540
canccttcga	cacctctttt	ttagcgggtc	catcgaa			577

(2) INFORMATION FOR SEQ ID NO:389

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 634 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...634

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:389

```

ggatgttgat ttctgggattg aagttcgtgg caaacgcctt gtggtggtcc caccattgca      60
gtccacaata tcgagataat gaattctcatc gaaatgatct tggccgcata agccgtatat      120
acactcgtca caccgggatac gaagccgaac ccaggatagc agtcaggccg gccttgcgaa      180
aacgatcctg ataagccact gccaaactgta ttcatacttg gcttcgtcga gaggtcgtga      240
gttggcgatc cgagatagtt caccocacag cgcagacagg catccatgat cgtcgatcct      300
gatagggaag tgctacgttg atcaccaatt ccggtttgaa acttcgaaca gagccaccag      360
ttcttccaca ttgtcggcat cgacctgagc ggttggtacc ggacgttttt gatttcggac      420
gcaatcttgt cgcacttgct ttcgtgcggc tggttaacat gatctccgtg aatacatcgg      480
tgttcatagc accttcttgg ccacaacggt acctacaccg ccggccccga taatgaggat      540
ttaccatttt ttatatgatt ctttgtatga ttattactcg cctgtagcca aagataaaga      600
gaacaggcca acaaatcggc aaaaagattc cgcc                                634

```

(2) INFORMATION FOR SEQ ID NO:390

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 522 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...522

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:390

```

ggattcgtcg ccggtgcgcg acaaagcctt gctgctcatg ttctattcga tgacttgctg      60
gttcgggata tagcggaagt gaccgggatg tcggagtcaa cgtgaaggtc aagctccacc      120
gacttcgcac caaactctat aaaatgagag aaaatgaaac agaatataga agacaaaaag      180
ctcaaagagc tgttccacag ttacccaaac agccggctcg gactcaaaca acgcttcgac      240
gtgatcgtgc cgtacgagag gaagctgctc ggcgcgaaac gcgtgcccac cgtcgttcgg      300
catcgccatg gtgggagtat gtgtccttgc ggtggttgto ttctagtatt agactccaag      360
ggattgttta gcgggtctcga ttctgatagc ttgttcaaga ccgatctttc cgcaatccct      420
tcgtcggttt gggcagcgat aagccggagc acctctgata ttctgtccg tggtcatcct      480
cttcgggcta tcctctacga actatatcgc aacacgaagc at                                522

```

(2) INFORMATION FOR SEQ ID NO:391

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 674 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...674
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:391

```

tccccgggaa atccctcttt tcagtatgca acactccgga aataatcgcg cgatatagtt      60
gctcttgccc gttccctcac caccgtaat gcagaacaat tgcgtaggt tcccaaagga      120
acgctgttca cggaaataac cgttttgaac gatcgggcgg attgttataa ttgatttcac      180
acgaacttaa aagcatatgg tttgtgtata taattgttcc aaatggtcgg atatcagctt      240
cctgaatctt ctgtgctggt tcccagcttg aagtaatcgg agatatcttt ctctgtttgt      300
tccccgataa aggcaattcg atccgctgta atttatgggt agaaaacgtt cgcaccagcg      360
tgtagaggct tttatgcccg tttcgtccat atgtacaaaa agaaaatatg cctgaacctt      420
cgtgcaagca tttcgatgac gattcttcga tattgcctgt ctactgttg aaacagatgg      480
catggaatcc tgagaggcaa gggataatac atctttctct cctcccgatg tgaaaagtaa      540
tctcctcttt gcggaagttg ctccatcccg aacacatagg tttccggcat attcccccg      600
aaacgaaccg gcattgactg aaaggacgat atatcttaca tagtctttgc gcaggaagcc      660
gaagatcggc tctt                                     674

```

(2) INFORMATION FOR SEQ ID NO:392

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1338 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...1338
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:392

```

totgaacttat taaacgaagt gaagtgtagt acttggtggca gctgtttttt ctgatccgac      60
cctacttttcg acattgcaca tcacccttgc aggcacatct cataacctgc caacataaaa      120
acacgaaccg gaaacgctcc gactgtgcac gtgtttttctg aaaaagtggg accgcaactt      180
tttcgttccg gcacgttttt tttcacttct cgcacaaaaa gaaaaatttt cccacgccac      240
gttttaggag gtagaaatat aaaaaattcg gggcgtaaac tatcagaaca tgggttcgcg      300
agattatccc aaacgcatcc ttatacgatc gcctccttat ataaatacgg agtcgtttct      360
atgcagctgc cctatgcaaa atggctatat ttcacgcaca ataaagaaag tcattgcgac      420
aatgagaac aatcaaactg aagacaaaga gtttgagatt tacattccgg cgactcgcat      480
acatgaagcc ttaagaggat ggctgccgag atcaaacggg atctgcatga ggacaatccc      540
tattcgtctg tatcatgaac ggctcgttta tgtttcgacg cgaactgagc aggtctcga      600

```

tgagagttat	caagtggatt	tcgcccgcta	ctccagtatt	gcggtatgca	gagcacattc	660
gtgctcaagg	agattatgcc	cgtgacgccg	acatgcgtgg	caggacagtg	gtcatcgtag	720
aagatctgat	tgattgggtt	atacgatgag	ttgcgtaaag	gagaatttct	acgagcttgg	780
agccaagagg	tgcgcatagc	agctatgctg	accaaaccgg	ctgcactcaa	atggatatcc	840
ataccgatta	tgtaggcttg	gagatcgcca	atgactttat	cgaggacacg	gccttgacta	900
tgatgatctg	ggacgcatgt	accaggacat	cataaaaataa	aagaatagat	gcttaacgta	960
ctaattcttcg	gtgctcccgg	tccgggaagg	gcacccaaag	cgaagaactg	atccgtcgat	1020
atggattccg	catatttcaa	ccggagagtt	gcttcgtgcc	gaaatcaaag	ctcagaccaa	1080
ctgggccaaag	cagcagccgg	ctacatcaac	gagggacacc	tcgtaccgac	agcctgatcg	1140
tggacatgat	ggaaaagctc	atcagcactt	tggtcgtagc	gaggggatta	tcttcgacgg	1200
atttcacgt	accattcccc	aagcaaagcc	atggagacga	tgctcgacac	tcattgatgg	1260
aagggtggaca	tagtctgaat	ctgcaaagta	cccaggagaaa	tgctcatcga	acgcctcctg	1320
aacgaggaag	ggtcagtg					1338

(2) INFORMATION FOR SEQ ID NO:393

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 634 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...634

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:393

cgaggagggc	tgaatctctc	caccaccatt	tccacgagct	gcgtaaagg	gcaatcaccg	60
cgataaagat	gatcagtgag	aggaagctca	gatccactcg	gcatattggg	atccgagcca	120
agaaagagca	ccggccttga	aaatatattc	tgtaacagat	agttgatggg	caaggtgcag	180
accaagatga	aagtcaggca	gctccgagtc	cgatagaggt	cttcacattc	ttggaaacgg	240
ccaagaagaa	cacattcccc	agtagtaggc	aaaaaccata	ttgnccacga	atatgagcgg	300
acaaacatac	ttatgtaatc	cataattgat	actgtcttaa	ttgttatcag	gcgtgtccta	360
cttagttctc	ttgcaaattc	ttgttacggg	cagatgtacc	cagatgacaa	ctgccacggg	420
gatcagagcc	atnggcggca	aatcatcaga	ccgttattga	cataaccgga	ttcgtagaag	480
ctcttgggaa	gacttttata	tccagcaatg	taccggagcc	cgagcaattc	gcggaagaag	540
cgatcataac	caaaacccat	cctatcccag	accggttccg	atccatcggg	aatgacttcc	600
aaggacgatt	gggcaaggca	aaagccttca	aacg			634

(2) INFORMATION FOR SEQ ID NO:394

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 463 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...463

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:394

ggccgtctcg	gacagctttc	ctgttctctg	caacggactt	tgccacgctt	gcgccgagta	60
gtccgctccg	catacttttc	ctttcgtcct	tgtcagaagt	tggcgatgtt	ttgcccgccg	120
ccgcaaccga	tgtcgagaat	atcctcccac	cggacggctg	gatacattcg	tcgatgcacc	180
agagagccat	tttatttggc	cgtagttcat	ccccgcaagc	atcatttttc	cccagaaatt	240
gttttaggtc	tgcggcaatt	gcttatgaac	ttcttgaaga	gtctcatctt	ctatcagcag	300
ctaaaagaac	aagaaataac	gaggagtctt	ggccttgat	tcgggtattc	ctctccgtag	360
gtctcctcac	aatagcgttc	ttctcccagt	ataggaaatg	tgtggcaatg	atgaagggtg	420
tcattgacgag	tagcatccac	acgaggcgga	agcgatacaa	acg		463

(2) INFORMATION FOR SEQ ID NO:395

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 451 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...451

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:395

ttggggattc	acattacccc	tgtcgcggtc	gaagtccgta	gcgtgtacag	aaccacgagc	60
ggcttccctg	taaccgtttt	ggcatgtatg	cgggccggtg	ggtgagccag	tcgtgggagt	120
ggatcacgtc	gcacggtatg	gtacgcgtat	cacgcctgct	acgatggagt	aattattgat	180
ctcttccagc	agattgccgg	atagcgtccg	gaaaattcga	tacagccgag	ggcatccgnc	240
ttcttttagct	aaaatcggca	taaattgttg	tgcgcagatc	ctcgtatgtc	cggaatccat	300
tcggttgccc	aagagttggg	tcaccgcgtt	nggtggggac	attttgtata	ctatgggagt	360
gcaagtgggt	gcctatgagt	cggaggaaac	tctgtcctcg	tctccccacg	gtttgggaat	420
ggacgaaaagt	aatatcccatg	tgggctgcat	g			451

(2) INFORMATION FOR SEQ ID NO:396

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1036 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...1036

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:396

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gccaacgctc ggaaaacatg ggcgatccca gtaccactac agccaaggcg catctgccag      60
aaaacgggag ccatgctgct tcatcaggct tagcacttca gcttatcacg gtcttccacc      120
agtatatacc gggctctgtg cctgttctgc cggacggagc gcgcagtgcc gctgtcatca      180
gagcctgcac gtctctggca aaagctgctc ttcggagaat tgctcgatag agcggcgatt      240
ttctataact ctgcaaatga tttcatatag acaaagatac acaaatagcc ctctggctat      300
cttttcatct acacgagaaa tagcagcaag gcagtatgcc ggtttctctc tgcagtacgc      360
ccgatcaaac ccgatggact ccactcataa aagactcgat cacaacaag aaaaagtcca      420
tttatgatcc ccaaaaaatg tgcgcgagaa aatttcactt ttggagtcct ttgaaaaaaa      480
ttattgacaa ccctcatttt ttcagaggtc tatatcgggt ttactcgtcg ccgttcgatg      540
ttttctttcc ggccgggaaa agtttccccg acagccgaca aaaataattt tccggccgga      600
aaagctctat ccaaaagcctt cggatatgta tccaaagctt tgtacacata tacgaaagct      660
ttgtttatat atccgaaacc tttgaaaaag aattggatta tggctttttc aacttttccg      720
tactgcagaa aaaacttttc cggccgggaa cgattatttt ttttattgct gtgacctgtg      780
tcgtgatact acctcccaca aacgagtgtt ccggtaaagt atccgcctcc gcaaggcatc      840
agtgcagcac cgaatccttt cgcactctgt cataaacctg ccggcaaaca ccctttcgag      900
tatgcataca gaggtgcagg aatatggttt gcgttgcggt gggttagatt tatctttgcc      960
gcaaaagaaa tccttataaa atggngtaca aagttttttt gtcgctctgc ataggtttag     1020
ccctgagtga agcgca                                     1036

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(2) INFORMATION FOR SEQ ID NO:397

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 643 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...643

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:397

```

agccatttca ctgtgtccga tcgcttcgag acagcgtgcg gcttcgcaag atgactgcgt      60
tcatacagct cgtgtggata gtacggggct gagacagtga cagccaaaga aaacgatgct      120
gaagagcagc caaccaaacg ggcgacttcc ccacatatcc aaggtataat cattcaaggg      180

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aagggcagtg	tcgggggtttg	cagcagccgg	gctttcaggt	ttgagcggat	gcgtgtcggg	240
gataggaggg	ttttttcagg	acagaataca	aagtcctgtt	cgctctttgt	cagcaggccg	300
gcaggagacc	caaatcgcg	atcatgcttc	gtactacggg	tggggtacgt	agggcttctt	360
ccctatgatc	tccggtacca	tctcgtgacc	gggttgaaga	gcaagaggcg	cggatgcttt	420
atttccgtcc	gaagtcggcc	gtatctccat	ccagtcgaca	gtattccatt	tatatatagg	480
ggttggtaat	cgatgagtag	agagccaatg	ctctgcacgc	tctatgaggt	cgaagatcgt	540
gcgtttttat	ctgtacgagc	ganaagggtt	ttgcattttt	tctttcgacc	cagctgatag	600
ccgtcatgct	atccgaatag	ggtggggggg	ggtttttttt	ttt		643

(2) INFORMATION FOR SEQ ID NO:398

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 2112 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...2112

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:398

cggtcaatgt	gtacgatctg	gggttgatat	acaatgtgga	cgtaggagcg	acgggttcgt	60
taccgtcacc	atgacactga	cggcaccgaa	ttgtcctgag	cagacttcat	catagaggat	120
gttcgcatga	aggtggaag	cgtgaaagcg	tcaagggggg	aaagatagac	ctgaccttcg	180
aaccggaatg	gaataagaca	tgatgagcga	agaagccatg	ctggagcttg	gattcctcta	240
aaaactcggc	tccgaatcga	atttccccc	gcgttcgaag	atctacttta	ccaggatgcc	300
catctcgggt	cgcgccatca	tgccgatcct	atgacagtgg	agagcgtttg	gccgcttggt	360
tggagcgtat	tcgccatgag	gccaaggcca	tcacttcatg	ggcgacatgt	tcgactattg	420
gttcgagtat	cggtatgtgg	tcctcgtggc	ttcacgcgtt	tcctcgggaa	agtagccgaa	480
ttgagcgtat	gggggtggag	attcatttct	ttgccggcaa	tcacgacgta	tggctgacaa	540
ttatttgacc	aaggagctgg	gtgctcatgt	ccatatgcat	ggcattacgt	ggagttgtcc	600
ggcaagctct	tccgcttggc	acatggagat	gaggagtctg	gtctgtgaag	cgttcgtacg	660
actgcatgta	ccgcctcttc	cgcaatcgtt	ggcacgcctc	ctttatgcag	ccgtgcatcc	720
tcgctggaca	gtcggttggc	ctatggcatt	tcactgaaaa	gcagacgcag	cggagagaag	780
cgaagacact	cggcaatatc	ccccacgcct	acagcaacga	ctacttcgat	ataaaaaacga	840
atggctgatt	cgctttgcca	aagagcatag	tgcccgcacat	ccgaagtggg	tttctatatt	900
ttcggccatc	gacatctgct	ggtcgatatg	gattgcgcga	tgagaagcgt	gtcctgatcc	960
ttggcgattg	gattcgttac	actcctatgc	cgtttgggat	ggcacgacgc	ttgtgctcga	1020
atccatggag	acatgggaata	agccttcggt	accaagatcg	ggacagaccg	cttgataaaat	1080
acgacttcac	gcccgttcag	ggtataaacg	aaaatagctc	tatgggaaga	taacaatcac	1140
ggtaggcgtat	attactcgct	tcgaaggaga	tgccatgtca	atgcggcgaa	tcataccctt	1200
ttgggtggag	ggggagtggg	cggagcattc	accgagcagc	cggccccgaa	ctgcttggag	1260
gagtgtcgca	ctctaaccgt	tgccctacgg	gagaaagcaa	aataacggga	ggataacaatc	1320
tgcggcgcaa	tacgttattc	ataccgtagg	ccctgtgtgg	catggagggc	aaatggagag	1380
ccggagctat	tggcttcctg	ctaccgtaca	tcgctgtcca	tgccttggac	aagggactga	1440
aatccattgc	cttccctgca	tcagtaccgg	gtttaccggt	atcctaaaga	tcaggccgcc	1500
cgcattgctt	tggccactac	ggggagatta	ttgcagatcg	ccccattgac	gtcactatcg	1560
tgtgcttccg	gaagcggata	aggagtttta	tatcacacag	gactgacgcg	taactcctgg	1620
ccttctcgca	agatctctat	cgaaaagcct	tgcagtatac	tccgcctctt	ctctcttctc	1680
tattcagttc	gctctcacc	ccccaaagggt	tccttocaag	acccttagg	gatccccct	1740

gagaccacct	aggggtccta	cccggactcc	ttaggggtcc	cataggagac	tcctcggggg	1800
tctcaacagg	gaccctaagg	gatcgteccc	atacttcttg	atgtcttcgg	agaaggtttt	1860
ccaagagact	tttccccctc	ctcctctctg	cacgcttgcc	ctgaatctgt	gtgtcagcgt	1920
cacgtttttt	tttacatttg	tgcctaataa	gctaactctc	aggctaattg	gaaaattgtt	1980
acaggataaa	ttggctcagt	ataccgagcg	caaaaggcac	aagccgcagg	tatttaccct	2040
tatttcagaa	aaatcgaagt	gatcaggata	ccgaggtcgt	tatcgatggt	cggaaagtcc	2100
tcatgttggc	tc					2112

(2) INFORMATION FOR SEQ ID NO:399

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 647 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...647

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:399

gggcgtttta	tcagattgta	caactataaa	atcangacat	cattatgaat	ctacagaaaa	60
gaaagaactg	tgcccacttc	cgtttgaagt	tggaaactac	ctcaacgagc	attttcccga	120
aatgtcggga	aacaatccat	tcattacgca	cggtcggatg	aagcgctgac	tgcctactgt	180
gatgccgttg	cacaagcttc	tctcatcccg	aagccgagag	tatggcaagc	gaagtcctgt	240
atcaaggctg	cattttctcc	gatacgatac	ccttgtttcc	gtcttgagac	gggattcgag	300
caggaactgc	cgtcacctct	tcccgaaga	ctcgctccga	tacgctaaaa	aacaaggcga	360
tacaaagcgt	atttgccaag	tatgacctta	caacgacttt	gaggcaagtc	cggaaatacga	420
acatctctac	accgaactga	cggcacgata	gtcctcctta	tcgaaagcaa	tcacctgcct	480
acaataggcg	agggaaacgt	accgtataat	cacccaacat	cggaaagcgt	tcagtatcag	540
agccaagata	tgtactccgc	ttcacacgac	aagggaaca	ctcttgctct	tgctcgcgac	600
tatcttgtcc	acgtcttga	aactctaaaa	tgctttgtat	ggatata		647

(2) INFORMATION FOR SEQ ID NO:400

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 372 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...372

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:400

```

cagaaaacac atttagtact agtagttttt tctcgatcta cccaaggatt gtcagatctc      60
tccaatgggt ttttaagtat aaaatcggaa gggtttatgt atcaagtccg tcggcccgat      120
atttacaggt cggaggactt cacggagctc tattcggtat ttcgaacgag gagtaccaca      180
ttctctacgt ggtgggggtg ggaaacatat ccaccggacg ggattttacg gctcgggtatc      240
tgccactgcc atcagcagag ccaaatcgcg ggcttgtgtg gcaggattgc agctacatag      300
actatcctcc tgggtgcagc aaagagggtg gcatcgatca cacctcgttg catgccggct      360
cgaggcggat cc                                                              372

```

(2) INFORMATION FOR SEQ ID NO:401

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 812 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...812

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:401

```

gcgaaaccat tcccgacttt catatatgga gttcaggctc ggccaattaa cgatgcctta      60
aagactgata cggtgggacg cgctgaggaa gttcggtata catcgatgaa atagaaaagc      120
gagcagagga aatgtgcaag gcggaactct gcatcgtagg ggaaaactgc ccaaacgggt      180
atgccactgc gacacgaggt aaacaacatg cttttcgacg aagacggaca tgtactttgc      240
gtcatgacct cgacaccgtg atgccgaact ttattttctc cgactatggc gacttctccg      300
taccggagcc aacaccggcg aagaggacga caaagacctt gacatgtaaa cttcgacatg      360
gaaatcttca aggcctttac cgaaggatac ctaagggggc aagctctttc ctcaccgacg      420
tcgaaataga gaatctcccg tcgccgcagc actatttccc tatatgcagt gtgtgcgctt      480
cctgacggac acatcaatgg cgatacgtat tataagatca agtaccocga acacaatctg      540
tacgcactcg tgcacaattc aggctgctac agagtgtaga ggactgcagc tgcagatgca      600
agcttttata gaccaatgtc ttaggtatta agctcttacg tgtaccaatg tcagctacag      660
acacactttt ctaaagacaa gaagacccac cgacttttagt ggctcttcgc acaatccttg      720
cggatacgat gaagcggact taaagtcgct taaccgggtc agtttttgat tataaaagtt      780
aatctgaaag attatgaact cactacttgc ca                                                              812

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(2) INFORMATION FOR SEQ ID NO:402

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 524 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...524
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:402

cggccggagc	tactttcgta	ttggtaaaaa	cggatgtgct	cggacaagtg	atcgctcctct	60
acccgatatg	ctgaactatc	agatccacat	caagaaagct	ctatgttcaa	cactcctccc	120
gtattccccg	tttatgtagc	actccagcga	tgaagtggta	caaagaactc	ggcgggtgtga	180
aggtgttgga	aaagataatc	tggaacaaggc	agcccttatc	tacgatgcca	tcgacagcag	240
caagacttcc	gcggcacggt	taatcctgaa	gaccgctcta	tcataaacgc	ttgctcgtga	300
tgaaggatga	gtacaaaagaa	ctggagaaaag	agttcgctac	cgttgcagct	tcacgcggca	360
tggtaggtat	caagggacac	cgctctgtag	gcgtttccgc	gcttctctct	acaacgcatt	420
gcctatcgaa	agcgtacaat	cttggttagc	gtaatgaagg	aattcgaagc	ttaagcacta	480
atcgatgaata	attgaaagag	ataagatgat	tgcccgatatt	cgct		524

(2) INFORMATION FOR SEQ ID NO:403

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 535 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...535
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:403

ggtcgatacg	ttcttttagt	ttggcgtgag	caatatcacg	ccccacgata	tcgtaccact	60
gagagacaaa	cgggtggaaa	caggatactg	cgacagcttc	tcagaatctc	aggcatcgga	120
cgattcagat	cgaccttgac	caccgtacct	ctgtaccctc	acgcattgat	tcagggatga	180
ggcgtgtggg	attggttcca	tcttttcgat	ccagataccg	tctttattga	tctttgcctt	240
gatatcggt	ctgccgaaca	actgacgcc	atacctacgg	gacagcttgc	tccagtcggg	300
gcaggcggat	gatgcgcacg	tcgtgtgcga	agtatttgc	tccaactgag	caccacgtcc	360
cagatgatag	gcagcttcca	agacttcttt	ttcagttcga	catcgnggaa	ggcacgccc	420
ccttcgtttg	cccgaagtag	gagattgtcg	taagtacttg	gcccgaagcc	agctttgacg	480
gtctttgaag	ttcgtttcgg	ccgaaagttt	ccgcctattc	acgaatgcca	ntgtg	535

(2) INFORMATION FOR SEQ ID NO:404

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 865 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...865

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:404

```

gtgccatcat ggctgtgctc atcggactgg gttatacacc gagtgagata aagagataat      60
gtgggtgctc aatttcaaag aatttcatgg acgattcggg ggtatcattc aagatacgaa      120
acgggcttga tcgagaagtt cggttggaca aaggcgattt cttccgcaat tggcttggcg      180
acctgatcaa ggccaaaccg gcaacagcga atcgacctt gcggaatttg ctgcaatgaa      240
aggagaaaca aatttctcga catttctctc atcggcacca atctttctac aggcctctcag      300
agatcttttc ggcagaacat acacctcgca tctgtatagc cgagctgctc gtatctctat      360
gtccattccg ctgtttttcg ctgctaagcg cacttccgaa acgatgtata tgtggacggc      420
ggtatgctga acaactatcc ctcaagggtg ttgatcgta caagtatgta accaagaact      480
ttacacgaac ggctactatg aacctatcaa taagaagctg gagaaaacgc ccaggaagat      540
gccgattacg tatacaacaa agaaacattg ggcttccgac tcgacagcaa gagaagatag      600
ccttcttcag ggacaacgca gaacctcctc atcgagaatc gacagcttct ttgactatac      660
cgtgtogeta ttcggcactc tgctcttgct caagacgatg tacacctgca cagtgatgac      720
tggaacgca ccattacatc gatacgctgg gagtaaagac tacggatttt gccatcagcg      780
atgcaaaaaa aaagctttgc tggaatccgg ccgctcatac actcagtcac attggagtgg      840
tacaataaca gcgaagaaaa agtca                                     865

```

(2) INFORMATION FOR SEQ ID NO:405

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 488 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...488

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:405

```

atcttcgaga tgccactggg cattatcgat ccaattcttc aaaaacaaaa atgctcgatc      60

```

```

gtttgaggcc gatatggatt gttgcacggt gcgctctacct gtcggtgacg ttataggcct      120
gaatagcctc gccgaaaatc ctattgccaa cttgctgata gtcataatta ttattgccgc      180
ttaatttgtc aaaatttaat gctatgcgga caaagatata taaaaaacccg attggcgaac      240
tctgaaatta agtcctccaa tcgggtttgt aaattgctaa aaagcaacaa taatttaatg      300
agtctttttt gactctcttt tttattgctt atcagttgcc tttcgtgctt cttggcgtgc      360
gggcaatttc ctgcttcagc tttgcctttg cctcgcaaga tttgtggccg tgcttgctct      420
tgcactcgcc tttttctgac tgtggcagtc actttttttg cagtctttgg atttgnccct      480
gctacaat                                         488

```

(2) INFORMATION FOR SEQ ID NO:406

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 534 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...534

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:406

```

ggagtccgcc cccttccttg gcgatgacga acggctcttc tggcagaggc ggaagatcgg      60
aacagacaaa cggccaccct gtacgaaaaa ctcggttgc ctcctatgaa gccatagagg      120
cattcgtaca gtataggcct gtcgaatgag aagcgtata aatacaataa gagaggcttc      180
cttcacttgt ccattcggac ggagaaggaa gcctctttat tttggtaccg acctttgcca      240
acggcggcgg ggtttatctc cgggcgagct gatgatcgat gaagatcaga ttctctcctg      300
agagagacgg atcgtttcca cgatttcggc agcagtggct tcccttctac ctgctcgcg      360
atatacttcc agaagaagtc ctgtgatgcc attctcggc ttcggaagca gcccttacga      420
cagcctcgat catttcggtc atttgcactc gtgttcgtac acctggttga atacctccaa      480
tacagagccc aacttctggg gcacggcatc gatagcttct atcttcacct cgcc          534

```

(2) INFORMATION FOR SEQ ID NO:407

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 632 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...632

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:407

gttcgaggta	gcagaggtag	tgtcccgcca	cgagtgcat	caggaagaag	taaggccgaa	60
gatacagacc	atcagttttc	cactcatagg	caccaccaaa	gcataatagcc	tacaagtatg	120
ccgaatatgg	agctgtattt	gagcaactta	ccttgtgcga	gaatccggtg	atggccggtg	180
cgattcctat	gagaatagta	caagggggaag	aatagccaaac	gggaaacgat	aagccagtat	240
gctcatgccg	taacattcag	tccgatgggt	atccatgtcg	tgtctataaa	tcggctatct	300
gtgtacgtgc	atgtgcttct	ttctgtctct	tcctattaca	aatatgggtca	ggccccctcc	360
tactatcggg	atcagcatcc	acagataatt	ggtcgataac	cgatatgggg	gtaaacgaaa	420
aggatcagca	gactcgtggc	aaagtgcagt	atccccatat	caggctgggg	atgcctgctc	480
cggcgatcag	cgtttacgtg	tctgttcgag	catcttctcg	atcatctgta	cgctctcttg	540
ggtgtaagct	gtttttcttc	catttttttg	ctatcccggt	agtggttcta	ttccattttg	600
aaaatgtctt	ccgcaaggca	tttcttaccg	ct			632

(2) INFORMATION FOR SEQ ID NO:408

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 549 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...549

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:408

tggtttttgt	ggaagatacc	ctgaagcgag	aaaagaaaac	cgaggcgcat	gtgtgttgga	60
gatacggacg	nacggcagca	gcttcaagga	tttgtatcgt	tagcctggga	ttctttgaac	120
gatgccgtta	cccggcgaaa	aggttcgtga	tggagctatt	cactgagggt	gccgggttgg	180
tgaaaaagat	aaagtgagaa	tagtcctgct	gaaagggtat	cctgaaggag	cggaccggca	240
tcaacagagg	tgccattgac	aggtcgggtat	gagtatgaat	gtccgtcgcc	gtcttcgatt	300
ggcagatcgg	ggaagagacc	gaagagatca	tggaatacac	ttgcgaaagg	ccacctgcc	360
ccacagcgga	cgggattata	cggcttggt	taccgaggat	attgccctct	cggatgggcn	420
cgtacatttt	tcggggattg	ccggccttga	ttgtggccat	cgcttcngat	gatggggaat	480
atgcattcca	cttaatggaa	tgcangggga	gattactttc	ccctcaccta	tatttctgtc	540
cacaaaaag						549

(2) INFORMATION FOR SEQ ID NO:409

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 533 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...533

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:409

gcctatcttg	ttgcagccat	agttttcttt	tcggactatt	ccgatagcat	cgctgctcag	60
gtttggaagt	tcgagtcgag	ggtaagacga	aacatgcac	atgcaaaaga	ccgatgtgga	120
gcgagacttg	aagcgtctgg	gtttcacccc	tatggcaagc	tgctcgactc	tatcgatctt	180
cacagaatgg	aaagaacctt	cgtgctaatt	cccttttccg	cggagcggaa	ttgtatgcoct	240
ctccaccggc	caactgtatc	tgacagtggg	acaaaaagat	ccgctcttta	tggtgtacga	300
tccgatacct	ctttctatgt	ttctaccgac	aggagcgtga	tcgtcccaac	ttgcagtatg	360
ctgcccccg	actgatggcc	tcaggggata	tactctgtcc	ttagctaccg	gccctctctt	420
cgacctcatt	gcatttatca	acgatgatcc	attctggnca	aactttttcg	ctcaagggtta	480
tgtgcccggg	aatggncaga	acatattaag	ttccccgtct	gggcnaaact	gga	533

(2) INFORMATION FOR SEQ ID NO:410

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 493 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...493

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:410

acgaatacct	ctgctccgcg	atagatgcc	ggcaggaaag	caaatgggaa	tcgtgcagca	60
tgacgagccg	gtctgccaca	cctgatcgct	ctgcacacgc	tgcacctccg	cacagtatgg	120
cgtacgcttc	cctacggcga	cgagccgata	tgctcggtcac	ggcaatgtgc	caaagcctcc	180
acggccagtc	ggaggtcttc	ctcgtctcga	tgcttcccac	atagagcagg	taacgctcag	240
gcaaacatat	cgctccctcg	ctctcgactc	atcctcctcg	gtagcctgtc	cgaagccggc	300
gaacaaccct	gatagacgac	atcgatccga	tcggcaggca	cgtgaaaaac	tccatcacat	360
cgcgcttggt	ctgctcgctt	atcgctatca	cctgtcggca	caacgggcag	catggccgta	420
tttgagcccg	atcaagcaag	ctgtccacag	gcttataata	gtgcggatag	cgaatgaaga	480
tcaagtcgtg	atc					493

(2) INFORMATION FOR SEQ ID NO:411

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 577 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...577

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:411

ctttttacgg	ccttttttgc	tgtcggcaaa	gttgctgaaa	gcgaagatcc	tttccagtcc	60
tcggcattgt	ccttgactgt	ggttcggcct	ccctgctttt	caggtgcagg	tcgtcgtagc	120
ggcgattgtc	gaaggtggtg	gagcggtgcg	gatctctccc	tgcgtgacgt	ggatgggtctg	180
atagaggtag	aggccgagcc	gatcctgtcg	tgtctgctcg	agaatccggt	gcggtagtg	240
ttggggatgc	gctgctgatg	atatatacgg	gtgtcgtctt	cgtgccggac	tcgcttggt	300
ggtgatacgg	gagtaggcat	gatcgtgtcc	ttgcaggacg	aggcggcacc	gccttctctc	360
agaatggagc	ggaagccgta	gcggatgac	ggttcattgcg	tccctgccgc	accgaataca	420
ctccgtggtg	gaacatgacc	acttccacgg	ctgtacgggtg	gtttcgagt	cgtttttcaa	480
ccacgtgcgg	ggttgaatac	ggatgccggc	cattggatgt	ccgtggtgtc	catgacgata	540
accgcacat	gggggaagtc	tatgtagtac	gaacgc			577

(2) INFORMATION FOR SEQ ID NO:412

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 668 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...668

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:412

tgccgagaaa	tctcgggtcg	ctgtacgctt	tcaagttcag	ccaattcggc	aaaattttat	60
cgtacccttc	ctgtgtaata	taattgtatg	ccatactgct	tgtatgtaac	gttggttgaa	120
aaaaaaaaatt	ttcttcgggc	tgcacctaca	gccattctcg	tccaaagaga	aaaaagaagc	180
ccggaagata	cccataatat	ggaatgtctc	cggaactctc	tactctttct	ttaagtcgtt	240
tgagcacttt	acgctcggtg	caaagatagt	aatctttctt	ataagagcga	ctttgttctt	300
cggacgacca	gggtgcaa	tccagcaata	agtgcaacac	tatgtgaatt	ctgtaagaag	360
cactcgaacg	gagtgccgaa	tccgagtttc	ttccgggtct	gtggttcagt	ttattctgta	420

taatgagacc	tttgacaggc	attggcgtgc	aaaggtctct	tttcaggtgt	atttgagggg	480
aaaaaattga	ggctccagcc	ggttctccat	cagcttttac	ctccaccact	gtttcttttg	540
agcaaaaaga	aaggagacag	ctgcttccct	aaggcttgct	tccgccttgc	gcagaatggt	600
gtanggcgag	acggtgcant	cgaccaccgt	ggtctgtcga	acgggatgat	tcctccgcga	660
gtaccatt						668

(2) INFORMATION FOR SEQ ID NO:413

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 609 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...609

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:413

cgaactgctt	ttgcccacgc	agcgaggctg	ctnagggtgc	tgnagacggc	gagttcatcc	60
ccgtaggagc	cagccagtcg	cagaagacgg	atgtccgttc	gtagcggcga	cgaatgtgaa	120
cctcaagnag	gcggtagcga	acgggaattc	cggaagacc	tcttcttccg	gctcaatacg	180
gtaccgatcg	aggtgctgcg	ctgcgtatgc	gaccggacga	cgtgcccttg	ctttttcgcc	240
gattccccgc	gacagcgccg	agaagtatcg	gatgcctccg	ctgcgcctat	cggagaagcc	300
cgtaccatat	taatgcgtta	ccgctggccc	ggcaatgtgc	gaggctgcgc	aatataaccg	360
acaggctgag	cactctggag	gaggagcgga	cgtatcgcca	gagaccatca	ctcgctacct	420
ggacgctgag	gggatgcaag	actccacccc	gtcgtgatcc	gacggaacga	aacgaccgaa	480
gcggacaaac	aatcccccat	tacgagcgcg	aaatcatcta	ccagggtgcta	tacgatatga	540
gaaagagata	gccgatttga	aggggatgat	gaaccgcctg	gcgcaccaga	acagccctca	600
tggcctgta						609

(2) INFORMATION FOR SEQ ID NO:414

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 515 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature

(B) LOCATION 1...515

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:414

ggctacgata	ggtagcgtgg	gcaactctga	ccatgctctg	gaaaaatcgg	aaaggccggt	60
cgttctcgct	ggttgggtcg	cagacctcac	aaccgagggg	ggtgatgaac	cctgtggatc	120
accccatggg	tggtggtgaa	ggtcgccgtc	aggaggtcat	ccccgttcac	gcaagggctt	180
gtatgctaag	ggcttgagac	aagagctccg	aagaagcatt	cttctaagta	catcattgag	240
agaagaaaaa	gtaatctgat	ttaatcaaa	aaaattatga	gtcgttcact	taagaagggtc	300
catatattaa	tctcaagctg	gaaaagaagg	tcttgccgat	gaagagagcg	gcaagaaagc	360
tgtcattaag	acgtgggctc	gtgcctcaat	gattctcccg	acttcgtggg	acataccatt	420
gcagtgcata	acggaaataa	atttattcct	ggttttggta	cccgaaaaca	tggtggggca	480
taagttaggg	aagttctttt	ctacacgtac	ttttc			515

(2) INFORMATION FOR SEQ ID NO:415

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 853 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...853

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:415

ggcgcagttg	tcgggtaatg	ctttggnacg	tttcaggaag	cgattccgga	aggttcctcc	60
gaaggcgatt	ccggcggtgg	aaacaccaac	ggagcattac	gaaacaacct	aaaacaacga	120
acagctaaca	ccttacttta	tggaattaaa	tcattgaaaa	atatcgaaac	atcggtccgg	180
cagatccggc	tttatgcatt	gcctttgtcg	tactctgcct	cattatcacg	ggctatgccg	240
tttttcatcc	tattcctttg	cagaaaaaca	gcgggagaaa	gtctatgtgc	tggaacgga	300
aagtcgctta	tgctcgctct	cagccaggat	gccaaagcca	acctcccggtg	gaagcccgcg	360
agcacgtcag	gcgttttcac	gaactcttct	ttcgattgcg	ccggacaagg	cggccatcga	420
agggaatgtc	aaacgcgctt	tatgctggcc	gacaaaacgg	cctacaatta	ctacaaagac	480
ctgatgaaa	aggatattac	agccggatga	tttcaggcaa	tatccaccag	cgtatcgagt	540
cgactccatc	cggtgcgatt	tcgaggccta	tccttatcgg	gtcaggacta	cgcccggcag	600
tttatcgctc	gccagagcaa	catcacggag	cggtcgctat	caccgaatgc	agcctgatca	660
attccgttcg	ttcggacaac	aatccgaggg	tttcctgttg	gaacgtttta	ccgtgctgca	720
aatcaggac	attcaaccgt	gaaacgantg	aaacggttct	atctgaaaat	acacctcggc	780
ctaagcggca	atgtgaccgt	ttaagcccc	tgcaacgaaa	aatcgcggtg	ttcggctgag	840
cctgatttat	ctg					853

(2) INFORMATION FOR SEQ ID NO:416

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 410 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...410

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:416

```

ggtgatacgc gtattctccg taacgcgctt cataaagagc aggatggcca aagcagtcct      60
atctctatgg caacgggtcaa gtcgaggatg acggtaagaa gaaagtaacc agcatgacga      120
ggctatcgct gcgagggccg cgaccgaatt ggccaccgaa cgccatccgc tcatattgta      180
ggatactatg atcagtcctc ggccaaacaa gccatcngga tgtatgccgt cagaggcccg      240
aggaaagcag gatcagcagt aacacgaang cgtgtatgat ccctgcaatg ggaggcgctc      300
gccgttggtg atgttggtca tcgtacgcgc tatggctccg gtgcgggaat accaccgaag      360
aacggaacca ctatattggc cgnaccctga gcatnagctc ggtattgctg      410

```

(2) INFORMATION FOR SEQ ID NO:417

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 568 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...568

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:417

```

ggccgatccc ttccgcatat ttccattttg gatatgccgc gagctgccac gtactccacg      60
gtgtagggcg taaggcactg gccgatgatt tcctccgtct atccgtgagc atatcatccg      120
cacaccgatg cagggtgcgc actttgcctg ccttcaggcg gatattattg gtgcgaccgt      180
cgctatggta tgcagaggaa gcgatcgagc cttcgctcgt atcggtacgt ctcaggacag      240
ctctctatcg aaggcttgca gatgtggctc ctcaatcaga aaagaactca gcttggccga      300
gtctgccggc ttcttccgat gcgatatatg ctctcttggt agggcaggaa aagatcgaat      360
ggtagaagcc actgtgtctg tccgggctcc tgacctgcct tgtcagggtac atttgccggg      420
gcaggcgaaa gtcggatcgt tcgggtggaag atcttccgca aggcaacta agtgacagagc      480
ttgctcgttc ggaaaaggat ttgcttgggc ttcttctctg gcggaatacg atgcgccggg      540
gcggatctcg tagctacggg taatggct

```

(2) INFORMATION FOR SEQ ID NO:418

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 562 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...562
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:418

```

ttcggaggtg atcaagtgtt cttttgtcgg tgaggcagag aaaatcgcaa gctggaggtc      60
gtgatgcggc gcgactatgg agacaaattg aatatattcg ctcttctgaa acgctgcttg      120
agtgccttcc gtccgaggtg cagaagaaaa agccatatcc gacctcttgg acaagctgga      180
tttgtcacga gaggaattgt ttcggtcgga gacagctact gcgatgtgga gatgatccaa      240
ctgggcggtt tgggtgtggc ccgtggcgaa tgctcgggaa gccgtcaaag cctggccgac      300
tatattacga cgagcaacga ggagaacggt gtcgcccact tggggacaag tatatccgac      360
acgaatatga agccgttcct ttctccgtag aaatgtcaat agtattgtgc cgggtacgct      420
catggagagc cttggtattc gtgcaccaag atccgcgcgt ggctatgtcg aggcaacgat      480
gccggtggat ttcgcactcg tcagcctatg ggtattttgc atggaggagc cagcttggtc      540
ttgcagagac cctggccggg at                                     562

```

(2) INFORMATION FOR SEQ ID NO:419

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 788 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...788
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:419

```

gacgaagtcg tcccatacca taccgcaccc tacacgcaaa agaatgctgc ctgataccttg      60
tgcagttcgg ggataccctt tacttcggaa tgaagcagat accatgaaaa ttagcgagga      120
agagcagatt gctcccctcg ccaatagttg tacgcgacaa tcttgaaaga attcgtcttt      180
caccaaccga tcaatacggc gtgcgatgtg tagtcaatcc accaatctgt ccgggctgca      240
ataccaatgt attgcgcttg gagagtggat agtcttgtct gatgtccatt agttgcacgc      300
tcaagcagcc atgcatcctg aaaattcgga gcatagcgtt cctgacggcc tcacgggcag      360

```

cgatggcctc	ttcgcgtagaa	gggaagctgg	ctcgatcaca	cgtagcatcc	cctgttcggt	420
ttctgccaaa	ataggggtat	accttcagat	tccaagcggt	ctttcagaga	acgagcattc	480
gttgcattgc	gaagctgcct	accactacac	tgaaccgata	caatcgagaa	gcattctccc	540
actgtaagca	gagagctttt	cttgacggat	ttgtacattg	gtagccggtt	agaaactatc	600
ggacgagttt	ccatatccct	gtcttcagct	tgggcaactc	acgttctttg	gcctgctcgt	660
aagcttggcg	gtaggcactt	tgtttgattt	gcattgagccg	aatgcaaccg	tcattagctat	720
ggcggctgcc	aaaacaccat	cttattcatt	tgttattctg	gttgagttat	taatactccc	780
atgccaaa						788

(2) INFORMATION FOR SEQ ID NO:420

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1055 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1055

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:420

agtcggagtc	tggaacagggt	ccgatggaaa	agtacctgtc	gggttgcccc	gaagcggaag	60
cgggtataaag	acgcgtagcg	ttcataccca	atagccagcg	cctatggcac	gagccagtc	120
ggcctcatat	agggaaatgaa	attcttccctg	tcgcgcagcc	tcgcaaagcc	ttcacggata	180
gactctcag	taagagagat	atccaaagtc	gccgcacggg	acatgtgcag	cccgttttct	240
gcaatcccaa	cgctggatca	gctctccctc	ctgtccggca	tcaccgcagt	tcacaccata	300
tccgcttcat	ggacaagcct	ttcgatgggtg	ccgaattgct	cccaatacta	tcgctatcga	360
tgagtttgat	gccaaatcgc	agtgggtatca	tcgtagagaa	ctgatactcc	atcgcttcca	420
ttcgggtgca	tagtcgtgag	gtctttgagg	gcacagagat	gtccgaaagt	ccatgtcacc	480
tgataaccgt	gccctccata	tagcctttat	aggctttggt	ggcaccgagt	acagcagcgt	540
ctcaccgccc	acactgggct	tttcggcaat	acagactatc	atgggctttc	cttgattctt	600
aaaaacaaat	gtacactttt	ggccattacc	cactgtgctt	gattgaaact	attaatcggc	660
catttgcttt	tcacagattt	gtcattgact	ttttcacgga	cctttgattt	atttagctct	720
tccccatagt	gctaaaatgc	aattctatgc	ttcagagcca	gagccaactt	cagagttttc	780
ttgctacgtg	tttttggtatg	taaatagggt	agctaaaaac	ttcattcgga	ttgttngaac	840
tngggcttct	tcacagagtt	gatttaagat	ttagtcgcac	aacttatatc	gaactcacgt	900
tataagaata	acgcgcagca	aggggggagga	aggaagggaag	gaaaaggaga	aagaggaata	960
gagagaaaag	caaaatgatt	ttggagagag	agaaaaataaa	aaaggagaga	gcctcggatt	1020
cgagactctt	ccttaccttt	ttttccgggg	aggag			1055

(2) INFORMATION FOR SEQ ID NO:421

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 576 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...576

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:421

tgaaaaatct cagccacaa agttttcatt ttggtttgaa aatttttctt tccgacgcag	60
gaaaaaaata ttttacgcgc gactttttga gtctctcttag taaggatatt tttttaacat	120
acttgtaccg aattatgcat ctaaccaagt gtagaatcct catctgtagg taatttgcac	180
cgaacaaccg atttgtagta cattatgtct gacgaaacgc gtaattttga cttcaaata	240
aagaagattg aaccaaaccg tacgtatttt tctgcctata ctcttcgcag tatagccggc	300
ctggtcatat ctttcaactca cgtccatata atcaatggcg tgacatcgct cactcccacg	360
tacagtgggg cgacaacgaa agcgatccgc agacaatccg cattcggatt cgggaattgat	420
tctgtacaat cagctttcgg catattcacg acttatttgg atacgccggc catagacttg	480
aaagaacctg gaggggtgtc ggcgtcgttc ctttcttttg cgataatctt actgctctct	540
ttcggagcta actccttcca atcatctcag ggctcc	576

(2) INFORMATION FOR SEQ ID NO:422

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 619 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...619

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:422

caatagaaaag ttggcagaag agaatccccg acgctggcag cacttnttca ggacgattca	60
cccncgtctc cggcagcatt ggcttatacg ggtatggttt caagaagctt gctcctgcca	120
atttcaatgc tgacgattgg ctctatgctc cgaacatctt cttatcacct cgttctctta	180
cgggtcttttg cgaccggtga catgattcgt ccatacagga tggaaggatt tgcccactg	240
ggggccccgt cgaagatgaa gtattcaact tctggcgacc gtatcttacg gatttctgat	300
cgaaaaggta cgagaaaagg gtggtgagct atgttttctg gccgtgaaga aatgaaaatg	360
ctattcgact ggaaacgagt agaacaagcc gtcgggtagt gacacccctc ttcaaagtac	420
cacagcccga tggaggtctc aacagatcgt gatctatacc aaaatggcac gccgactgat	480
gacagcccac tctcaccocg ccgatgccgc catgtggaag agatgcaact cttttcgccg	540
aagggtttat cttccggccg gagctttcgg atgagagcaa ctatctttcg tcatggaatg	600
aatcggtttt tacgaccaa	619

(2) INFORMATION FOR SEQ ID NO:423

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 653 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...653

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:423

```

gcgaagaaga gcaacggttg cgcagcacc atcctgattt ggcagccaat tcgatgcgtg      60
gtttgccggt caaacgcccc aaatcgactg gaaagctaag agcagaaacc caatcaggct      120
accgcctccg cttctgccac cgtgttggtta ctcttgccgg agaagtggag aatatgattg      180
taacctctgc cgaccttcca attcagacaa gaccgatggc ttcttgaaga aaacccacgc      240
catgagaaag gagatttcag tggagcattc ctgcagatgg gtgtatcgga gctgccatgg      300
cctgcctctg tatcggtatg gctcttcatg gaggcgtcat tccgcttgcg gtaccttctt      360
cgtattttcc gactacatga aaccggccgt tctatggctg ccctgatgga attgcccgtc      420
aagtttatct ggacgcacga tctttccgtg tgggcgagga tggtcctact cacgaaccgg      480
tggaacagga gcgcaaattc gcctgatgga gaagctgcac aatcacagcg gccgtngctc      540
atgctggtcc ttcgtnccgg cgatgtgcaa gagactaccg tagcttggag atggctatgg      600
agaatacgca tactoctaca gctctgatcc tttcgcgcag aatatcaccg atc          653

```

(2) INFORMATION FOR SEQ ID NO:424

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 947 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...947

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:424

```

tcacgcattt cgtttttttt ttgtttggtt aagtgaatta tgggtgattat ctcgntttgt      60
tctttttctt gagccatgac gatgtgcaac cacgggggaa tctcccggga ggtaccacga      120
aggccgaaag gcttgagatt tgaaggggaa atgcctcccg atacgaagcg tggggaggta      180

```


atactataaa	gccctggggg	ttatactata	aagggtggag	gcttttaag	tataaagtgc	240
ggagattgat	atttgcaggt	cttcggcggg	tttgttcagg	tgcggaacaa	cgtctcccga	300
tgatgctccg	aaaagagata	tgagtgggca	aaaccgatac	gctcgagact	tcccgatgga	360
ggccttgca	agggtgtaac	aggctgtttg	tcgcctttta	caaagtgtaa	taggggaggg	420
gtaaaatgcc	tttattcggc	atccgacagc	tgctacgggg	ctatcgtcag	tagtaaggat	480
ttgagaggat	tcaaacggaa	aaagcgcaaa	gaacgacttg	gtatgcagtc	gtccgcgaag	540
tggttttctt	tgcttctatg	tcccgataca	tggttcccga	tgataaatta	attgagagag	600
tgccaaaagt	tagaaaatat	attcagacga	tcgaactttt	ttccgacctg	tataagatta	660
acgattttat	attatggaag	cgcttgaaca	cccgggtggat	aaagaggggc	atgaagtttc	720
ccatggcaag	ttttcacaag	agcttcaggg	cgatggcggc	acaggcttct	gcattctgcca	780
gggctggtgg	tggttggtcca	atgtgtatcc	acagcattgg	gctacggtgg	gcaacgatga	840
tcgctgaggt	gtcgcagttg	gcggcgtgct	gcctggagcg	tgagaagaat	gggtagtcgg	900
gtagtccat	tcggtacatc	ctgaataccg	cttgaggcaa	ccttcgt		947

(2) INFORMATION FOR SEQ ID NO:425

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 352 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...352

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:425

ggctacaatc	tgagcgaaga	gacgggaatg	gtggattacg	accacatggg	aaaatggcca	60
tcgagcacia	accacagctg	atcatcgccg	gtggttcgcc	tattctcgtg	agtgggacta	120
caagcgtatg	cgtgagatcg	ctgacaaagt	ggcgccttgt	tgatgatcga	tatggcacac	180
cctgccggtc	tgatcgtgcc	ggtctgctgg	agaaccccg	gaagtatgct	catatcgta	240
cttctcgact	cacaagacac	tgngtggccc	ccgtggcggg	atcatcctta	tggaaggac	300
ttcgacaatc	nttggggcaa	gaaaaccccg	angggcgaga	tcagaagatg	ag	352

(2) INFORMATION FOR SEQ ID NO:426

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 523 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...523

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:426

```

cggcgatttc ctaaataac gataaattat agagtttttc tacatagttt catttaatat 60
ccagtgccta aaattctggt aagttttttt tgtgttgaa gcacttttgt attaaaaatt 120
aaagcaattt ctccatcagg acaaaaccaa tggatttatg tagaaatggt aaaaccatct 180
ctttgccaaa attatattga cacaatagtc cattatcgat ttgacaatt tcttagtccc 240
aaaagtgggt tccaataac caaattcacc ttttcaaaat catcaggatt cactcccaaa 300
tagtatcccg acaccacaga ttttttcctt ttttttcttt aatgaaatat cgtaggatt 360
atctatcaaa taagggaatt tattggtttt gttatccaga gtttcttggg gttaagatgc 420
tcaactaatg ccaaatatag gtgaaagctg ttactttaat agctaataga tctatttcga 480
ttccaaagat tttttttacc aagtatatca ttaagttctt tga 523

```

(2) INFORMATION FOR SEQ ID NO:427

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 473 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...473

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:427

```

ggattctgtg cattacatgt ccggtgtaaa gcggtttgtg cctgcgataa attcactgcc 60
ttcaggcccg atagccaagc ggtcggctac ggccgagaac ttcctttggg cagggtaaaa 120
ggtaagccag aagaggggtg atctgtcttt tttgtctcgc ggatatgacc ggacttcccc 180
agcagtacat atcggatctg tcttattctc gtccaaggaa gcaagagcta aatgtataag 240
atctccacgg tagagagcga ttcgggcttt tgggaaggat gtaaccacag atgctctcgt 300
ccttcgctcg tgcgtagcc acataaagaa gattgagggt gtcaggagaa tatcggtctt 360
ttctcggaag taatctgtgg caaacattgt tttgccatct ccttcttata tctgatcggc 420
actnacgggc aggatattga aggactgcgg gcaggatcga tcttgcacca gaa 473

```

(2) INFORMATION FOR SEQ ID NO:428

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1262 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1262

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:428

```

cgggccaaagc ccgaggagcc gaacatctcc tcaccttcct cctgacgcgc agatccaccg      60
aagtcttgat cacgttgatga gccttcttcg atgtaatcgc gcatatacca ttacgatacc      120
ggcagccacg aggaaatata cgggagtgaa gccggttcgt tcaaggctcc catcagataa      180
gtatcgtact gcccgttccg ttggcattga agtccanata agaggaataa ccggncagcg      240
gcacacgata aagttcacca agtcgttgcc ggcaaaagcc atcgccaaag cgaagtaccc      300
aagaggacga tcaccttgaa gacattgacc cgtagccaat acacacctgc atcaggataa      360
tggaacgac cagacagtac aataccagcc tgcggtattg gcagctatcc aagccgtgga      420
ttcttcggtc ataaaggaca ccccttcagc cttttgatga gcatgaaata aatgatggat      480
gtaaccgcaa tcgcgcgaaa aggcgcggcca gccatcggag attccgcctg taattaaagt      540
aaagagcaaa cggctcagat actgaacgac catcccgaag aagaaagcat tcccaccgaa      600
aggaagatac ccaatatgac ggaaagagct ttctccgatt gagaagatcc tgaaagccga      660
ccgtaccgcc caccttggtc atggccataa aaaagaaccg cctaacagct cgaaaatgag      720
cgagacggtc gtagagtagg catgccgagc gaattgaaca tatccatcag gacgacatcg      780
gtgacaccac cgacagaaat acgaccatca attcgtgaa agtgtaatgt tccgcctgaa      840
aatcccggtg cggcgatct ccatcatgcc gagcagcctt ggtcctgatg gcagaattga      960
aacgctgcca caccgacgat gatcttgaat aatcaagtcg aatatagcaa ggatgaaaag      1020
ggaagttgac cgcacgttg tgacaccac aatcaagtcg aatatagcaa ggatgaaaag      1080
aaatacgaca tggcggtaaa gataagactc cattaaatct atgttatgag gttagactca      1140
caaaaaaatt cggcgaaata ctttctctct ctgtctcccg gcaacgatcg gactctcaac      1200
tgggcaagag caaggttcgc ctatccgaca catcttcttt gcacacacaa aaatagcgca      1260
attcttaaga acgcaaaaag cccgtacggt ggtcttcccg ccttgtcaga tcccggcttt      1262
gt

```

(2) INFORMATION FOR SEQ ID NO:429

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1208 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1208

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:429

```

cgcttttact cgcacatga aatataaatt ctttatattt gcgttggttg aaaatgctaa      60
ggtacgatat tttgattggt attttaatgg gatcgtaaaa gggtaaatcta aatagcaaaa      120
tgatttgta agataagagc aactaaagac taataatata gggcaagaaa taatgccccg      180

```

ggataagtct	gacagaggaa	atcagtagct	aaggtcatta	ttcctctcgc	cataggcggt	240
ctgctcttct	gggtgggtgt	accgcaaaat	ggattttctcc	gccattggca	agatgtccgc	300
gacggtgtca	attactacat	catagctttc	tctctcttgt	tcgattggcc	gccaaactgta	360
tacgcgccct	gcgctggcaa	ctcctcatag	aactttggct	tctcctcatc	cacggaaaat	420
caatgccatt	ctgactactt	tggcaattac	acggtcaata	tggctctgcc	ccgtgccgga	480
gaattttggc	atgcgcggaa	gaaagccgct	acgagaaaat	acctttcccc	caactnctcg	540
tacgcttttt	atggacagga	tcatggactt	ggtgatggtc	ggacttatac	attgagtatc	600
atgatgggct	ttcaaggggt	tttctccgct	tttttcgtcg	caatccacaa	ctgacacaag	660
gctttttcac	cattttcagt	tccatcggct	atacgttggt	gttgtaggta	tcgggctact	720
tttcttcttg	ctctaaaata	cctctcacac	gtaggcccca	ttcgcaaagt	agcagcactc	780
atcgtaggat	actggagggg	cttcgggtcta	tctggcatat	ggagcacaag	tggctttcat	840
cttatattcc	atcctcttgt	gggtaggata	tttcttttac	tttacaccac	attctttgct	900
ttcgacttta	cacgatcggt	gggatgggga	gggggttgat	cagcttcgcc	atgagcagca	960
tagccgtagc	cgtacccgta	aggggggcgt	agggccgtgg	cacttcatgg	ttattgctac	1020
tcttgtggct	tcggcgtgac	gaaagaagat	gccggagcgt	ttgccttggt	ggtacacaga	1080
ctcaaaccgt	ttggactacg	gccgccngt	tcgtggctat	cggcttggtc	cttttgtcaa	1140
taagaaatac	gatcgcataa	aacagtcaaa	caattacaac	aatcatccaa	aacacttttc	1200
acagtatg						1208

(2) INFORMATION FOR SEQ ID NO:430

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 305 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...305

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:430

ttgcttcaat	gcttcatatt	gagacatctc	ttgattatag	ctcattttga	cacaatggtg	60
tatttgtcat	ctgcatcaac	acttgacatc	accatagggc	gtgagacgta	atgataaact	120
ggagcctggg	gaatgcctta	cgaagtcctt	gagaattgat	gcttgcaggc	gaggggtgtg	180
atgaaggtct	atttcacgat	gagtactgtc	ccctcggact	tgagagctga	atcagattga	240
tataagtctg	attgagcaag	gcgcatctga	aagccaaatc	tacgactatg	ctgacactcg	300
gcgtt						305

(2) INFORMATION FOR SEQ ID NO:431

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 652 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...652

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:431

cgcggctctg cctgtagagt ctgtacgctg aagtcacga agtattccaa ccggcagtcg	60
gcctcagccc gtctacgggt acaataatgt ccgatgaatc tgaggatcga tatctaagcc	120
gatgaccttg ctttgcaatg ctttgccctta gccgaaaccg tatagcgcag gcggtatttc	180
ttgaggttgg tgaagtgaac cgatttcgtga tacggaaatg tcccttggcg gcattccactg	240
cttcgagccg acgttttgat gcacatactt cacctcctgc atggcagggt gagggcgcg	300
tggggattga ccagtcggtt gcaaaggaag ttgccgtcac tcgtgcattc actccgaagt	360
ctcctccata agcccaatag gactttcctt tacgtctgta cggaggatac cctgatccac	420
ccagtcaccg atgaagccgc ctgcagggtt ggggtacttg agatagcctg ccaactgcccc	480
cataggttgc ggtcgaattg cccatggcgt gagcgtattc cgaagggatc acagggcggc	540
gctaccggcc cgtccgatac cttccaacca ttctgcattc ggatattggg tacatacata	600
tccggattcc actccattg ggcacgttcg tagttcacgg gcgcgccatc ag	652

(2) INFORMATION FOR SEQ ID NO:432

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 868 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...868

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:432

gatccctcgc gcatacagta gcagccaaca ataccaatga ggagaaaccg ctccaatgaa	60
accgcaaaac caatttaatg cgtcggcccc gggggcagct gtcagggcga tcgcgtttga	120
aaatttttag tctctttcct ctatgattga atctctggca tatggattcg cacttgtttt	180
gataattgaa tgtagcatcg ttaggtttat aagtgtgttg acagttcaaa tgcgattgcc	240
ctgtaccgag aaataatgca gcaactatct ctcggaaaaa gcactacctt tgtatcattc	300
caatttaatt acgtagtaat caagcagcaa attgcgtgtg atgaaaagggt tatccgcaga	360
gctctcatat cggctctatca taaagaagggt ttgccgagat actggccgaa ttgaacagac	420
aaggggtaga gttcgtatcc aaggaggaac tcatgaattt atcacttcgc tcggttatgc	480
gtgtcgggcc tggatgatct gacgcgttat ccttcgatgc tcgggggacg ggtgaagact	540
tacacccaat gatcttcggc ggtatttttg ctcgtcgcgg tcatgaaacg atgtgcgaga	600
agtaggcgag tacgggttac ctcttatcga tttgggtctc tggatctata tccattcgag	660
gccaccgtgg catcaggagc atcggagaag atatcattga gaagatagat ataggcggta	720
tctctctcat tagagagctg ccaaaaactt cgaagatgtc gttatcatct cgtcacgggc	780
acagatgccg gattttacag cctgctgaaa gagcaggagag ctccaacctc tttgctgaac	840

gggggatacct naagagtcga gtgcatga

(2) INFORMATION FOR SEQ ID NO:433

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 561 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...561

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:433

gagactaaag acgctctgca tacacttaag cagcgacttc ccttattggt ttgccgttag	60
ctttgtgctg ttggcgctccg acaagaacgg aatggggcta tttctttctt tttctttccg	120
ccttgatttg gtgtacttat cctgcatatt gttgtctctt tgcttctgaa tcagtactat	180
ggccaatcca ttttgttccg ttttcttttg ataaattcta tctgaagact catattccga	240
cattgcatcg agtttctgta tgctccattg gacgcatttt gcccatccca cttaatcttc	300
ttgggcatat tcgctatttt tatggcagtc gccgtacgtc agttttctat cgggagcaaaa	360
cggatcttac ggtggaaatg atctatgggt tgttgccttg tcatgctttg cttttattac	420
ccaaagccgc ttggccatgc tttcattccc ctgtccatca tgggtctttt ttggtgcgag	480
cctttttcct tctcagaaga aaaacttttg tcacctcttt catgctaata atcgtaagcg	540
tttatcttca acggcctttg c	561

(2) INFORMATION FOR SEQ ID NO:434

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 653 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...653

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:434

cagactgatc agtaccaatc cccaaaaaga atgccggaag aagaaataaa acattgaaag

gatttggcac	tacccaattt	gcctcgaaaa	tcgagtctta	ccacatacga	tcgtaaaaaat	120
ccgattggag	cattctgatt	ttctcctttc	ttccgattgg	caaaactcct	cctccgatag	180
atagatcttt	cccaacccca	tcgttctgct	tgccgattga	gcgtatcggt	catgatcgga	240
tgcaagcttt	catcttctga	tacaaatccg	ccacatgccg	gtacaaaccg	aatacctcgg	300
aaatagcttc	acaagcgaaa	aactcaggac	atacaatact	gctcgcata	aagagcataa	360
acgattgtag	actccagacc	taagggaata	tcacaggcag	cgagagatgt	aaagaggaga	420
agatgattct	aaagaccacg	agaaggcaat	gccgggcaaa	ataatggcaa	ggaagtcata	480
aagagaaaaat	tttccataaa	gtatcatccg	tatttaataca	aagaataagg	atagaagtag	540
gattcccccc	ttcttttagt	gtcgtagtct	tattcaggaa	gcgcaaatag	tcatatctgt	600
ccgcttttca	atggaataac	cggcattctt	ttccgtttcc	aagcattacc	gag	653

(2) INFORMATION FOR SEQ ID NO:435

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 617 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...617

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:435

cggaagatgt	acggaccgaa	agaacaataa	accccatctt	aattctcatg	tagtattcca	60
ttcgacctga	agtcacatcg	gggattcgtc	ttcgatgtga	cggagtgate	agccataccg	120
tttcggctat	ggatgccgaa	ggccagctat	gcgaacgatg	aatgtaaaag	acggttatgc	180
catgcaatat	gccgtcagca	aggcttcttg	ctggccatca	tcacaggcgg	atacagtcgg	240
gncatgccna	aacggggcaga	atatctcggc	atcaaaccatg	tctatatgcg	ttcgccaaca	300
agggtggagca	gctcgaacac	ctcctgcagg	agaccgggtt	gaagccgaag	agatagttaa	360
tatagggggac	gatatacccg	atctgccggt	gagcaagagg	gtggctttgc	ccgttgcccc	420
ggcggatgca	gtgccggaga	taaacagggtg	gccaaatata	tatcgcaactg	ccggggagga	480
gagggcgctg	ccgcgatgtc	atcgagcaaa	cgctgaaagc	acaaggccgc	tgggcacagg	540
gaatgggttc	ggatggtagc	ggacgggaagt	cttcttgatc	gaaaaatctg	tggtttatgc	600
tggacaatct	gaagaaa					617

(2) INFORMATION FOR SEQ ID NO:436

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1149 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1149

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:436

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ttcgaaaggt ctgaccctaa tgaatgcaaa gaacgccggtt gggatatgtgt gtgaagctga      60
ctcgtgcagc tcgtggtgca gccgtgaaga aacagtaaaa aaacgtacaa gaagcaagcc      120
ggagcttcga tcgaagttcc ggctttccat aacgaaggag agccgccccct gatacccctg      180
aagtggggca acggagcggc tcttccatat tcgagagtcc tatttttagtc gtagcgtatg      240
aaatactgat cgtcggcctt ggcaatatcg gcggagagta caacggcact cgcctaattg      300
gggtttccgg atggtgaatg ctctggccga agacgggtga gtgagttcgt ggaagctcgt      360
tacggagcga tagcgcgtat gcgtgtgaag aagcggagct gatcctgctg aaaccaaata      420
catatatgaa tctgagtggc atgccgttcg ctactggatg caacaggaga atatccctcg      480
cgaacagggtg ttgtccttgt ggacgatttg gctttgcctt tcggcacttt gcggtgaac      540
ccaaggggaag cgatgcgggg cataacgggc tgaagaacat tgccgaggga tgggatcgat      600
cgattatgcc cgtctgcgtt tcggcttggg cgacgagttt ccaaaggaag gcaggtggac      660
ttcgtcctcg gccgttttac ccccgagaag aggagaagct gccggagctg accaagcatg      720
ccgtggagat catcagagtt tttgcctggc cggtatccaa aggacgatga accggtacaa      780
ctaaggagat ggaagaggta aggatagacc gttggatgtg ggctacgctg atctcaagac      840
acgaacgata gccacggatg cctgcaagaa aagccgagta acgtgaacgg gctgcaagcc      900
aagccttcgc gtatggtacg tgtgggcgac gcattcaggt aaggaagcca ccggtgacct      960
attcctttcg tattctggct tggtcagaa tcggatgggt gccaaagctg tgaaggactt     1020
tctggaaaaa tcaactccgc cgaagagtat gagatactcg aaatgcaacg catttcggct     1080
ttgtggacag agccaaaggg cacccggtcg tccgaccaa aaaggacggc cgaagaagct     1140
tggagccag                                     1149

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(2) INFORMATION FOR SEQ ID NO:437

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 710 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...710

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:437

```

cctgtcggag ctactattac gattactgta acggtgcggc taaagtgtgt cagtttacgg      60
catgcaacaa cgctccaaat gatttgtccg ataggggctg attcttaaaa cactatatca      120
gacatcttgt gatagaacct catggatgat cccaacacgt ggttcaatct ttctagtact      180
catttgtatt tgtctctgag tcgggtacaag atgcctctca catgcctact gtaatagaga      240
aggatcgcc ttcgacctga agataatgac ttcctactat tccatcctca gctctataat      300
aatatatggt acgccaatcc caatacggcg tatgtggtag aaaagtattc ccgcaaggta      360
tgactatgcc tcccaaactg gatatagaat ggccaatata aaaaatcatc cgatagacgg      420
gtccttagtt ttcactccac cattaacctc cctgatgcaa atatcacgac atcaggaaac      480

```


acaatgacta	cgtttcgccc	agccaagaaa	gagggtttt	gt aaccctccat	ggtgtgaaaa	540
cgactgtaca	aataatcacg	aaatggttgt	ggagtataag	attagagagt	attcaactac	600
cttcacttcc	ctgattgtct	ttgcccggta	ggtcctatat	gtgtaacacg	gcaaagcggt	660
atgttttggg	ctgcgatacct	ccctgcgtag	aggtgcggaa	acttcggtgc		710

(2) INFORMATION FOR SEQ ID NO:438

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 438 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...438

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:438

cggctatccg	ctgcttctca	ccgccggaga	gttccgatgg	cttatgcgag	ctctgtcgt	60
gaggttcaga	tcggaaagca	gccgttcagc	ttcgcaagag	cctcttttcg	gctctttccg	120
gctatcagag	ccggtatcat	cacgtttcca	gagctgtaaa	ttcgggtagc	aatcggtgaa	180
attggaagat	gaatccagcc	gtctattgcg	aaattcggct	tgcttccgat	tggtcatgcc	240
cattaatcgg	tgccgtcgat	acgcaattct	ccgctgtccg	cccgatcgag	cgtaccagaa	300
tttgacgacg	cgtggctctt	ccggcaccgc	ttgtgccgac	gatgagacta	tctccccacg	360
gtcgatggca	atatctaccc	ctttcagtac	ttcagagagc	cgaaactctt	gcgaatgttg	420
cgagcttcta	taatcatt					438

(2) INFORMATION FOR SEQ ID NO:439

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 826 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...826

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:439

caggggtattg	accagctctt	cggtagacatc	gaaggggaagg	ttgatgggttc	gctgatggag	60
tggctctaccc	actgctggat	gcgtccctgc	atcttcaactt	ggctaccag	tccacatcgt	120
tggcctggc	ctttagtag	ggcgaacggc	cacgaggtcg	tcgatctctt	cgttcgtgta	180
tttgcggtcg	gggtcgaacc	gttgggtgcgc	atccaagtga	cgaagttgtg	gtggtagaca	240
acgaatcttc	gaagctgtcg	cccacttcgt	ccacatagtc	gatctgtacg	ttctgtcgtc	300
cggattcacc	tttctgcgac	gctttagtag	cggcatgaat	accgctcgat	accggaggaa	360
gtctgcgtca	tcagactggg	ggaaccggta	gggctatggg	aaggcaggcg	atattgcgtc	420
gtccgtactg	cttcactctt	tgtacagcca	tgggtcggct	tcgctatac	gggctataaa	480
gggattgttc	cttcgcgttt	ggcatcgaac	agttcgaagg	cgcgcgctc	cttggccatg	540
tcacagagct	gctataggcg	cagagtgcga	gggtcttctg	tacctcttgg	cgaattgggt	600
agcttcgtcc	gaaccgtagc	ggaatcccat	cgtgcagca	tatcgcttc	ggcgggtgata	660
cctacgcctg	tacgacgacc	ggcaaggctc	tgcacggatc	ttgtgccaga	ggttacgctc	720
cgaggtcttg	acttctcgtc	tcgggatcgc	tggctatctt	gcttaggatc	tgttcgatct	780
tttcgcttcg	aggtcgatga	tgtcgtccat	gatgcgctgt	gccaaa		826

(2) INFORMATION FOR SEQ ID NO:440

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1224 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1224

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:440

acgaaaaaat	tcccagacca	cgttttttcca	aacgctaaac	cgccatttta	cgaactgacg	60
tgtactgaaa	aaaagttgac	actcggagag	gaggtcaaca	tttcgatata	attattgctt	120
tttctgatct	ttctaaggat	cagctttttc	agcacacacc	aaagagaggg	aggctacgta	180
tagtagctta	tacaggtgaa	gaggaggaga	gagggcttag	ctcccgtgag	ctgcttttcc	240
aatgagatcg	gatcagtggc	cacaaagcag	ctaccattcg	cataagggtg	agcctttcag	300
caaattgtat	gctctgagca	ggcttaccaa	ttcggctaata	tctcgcggtg	acaatagaga	360
ttgtccagat	agctacgcgt	agtggccaaa	aaccctcggc	agtatcgcag	tggtaatgtt	420
ctacagggtt	atcgatatgt	agatggggat	gccggcttgt	cgcagacgct	cgccgaacag	480
gatgtcttca	accccataacc	catattggga	gggaagccgg	tggcaagcat	ctgttttctg	540
ggatcatgaa	agccattgag	atgaatccgg	agtggggttt	tcgtgctcct	cttcgcgccga	600
tcgactttcc	acttcggcgc	catatcgttg	ccggagggat	tggtcgattt	gggcgggtag	660
acgaaccctc	cacatacgac	tgttgctccg	aggcatgtcg	cagatagcgt	tcgatgaagt	720
cgggtgatgc	cggcagggat	cggagtcgag	gataaggagc	tgctcgcctt	gggcttcttc	780
tgctagcgat	tgcgacagcg	gccggctccc	atgttctctt	cggcactgac	aagcggcaca	840
gtccctcctg	ttcgtaagcg	atatattgag	aagtgtgaag	ttgccggaac	agtcgtctcc	900
aagaatgatt	tcgtagccga	cggatagttc	tcggcctgct	tatacagttc	ctccagcagt	960
ctgcgacaat	cccttttata	acgggtatga	gtatggacaa	ggtgggagac	atcttcgtcg	1020
tacaatttaa	tacggagta	tatgccaccg	ggctgagact	gtaccagtcc	gtccaattga	1080
ggtcgaaaaag	ctgacgagaa	acatcgttta	taggtagtcc	ggtagcgggtg	tcagctcgtc	1140
caccgaggct	gtgcctgctc	tgagaagaca	ttcggcacgg	gggtatccgg	ccaactatcg	1200
ggacggaaat	tcaatgtctg	aggt				1224

(2) INFORMATION FOR SEQ ID NO:441

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 754 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...754
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:441

```

cgggcaacgg ctttgcagct aaaacottcg gtctgcctgt gctcacgcac gggctgaagt      60
ggaagaaatg ccttctccgt ccaagcaact ggctgcctcg gcatgttcgg tacgatggac      120
gaaccgcccc tacaatacat tgctccggcg acgttcttca attgggagag agtatcatca      180
aggtgctttt cgtcccgggc actcgcgccg tcatctggca ttctattgcc cgcaggccca      240
agctgattta ccggcgatgc gctctttgct ggcgatatgg gccggaccga cttagggggcg      300
gcagctacga actcctgaaa aagagcattc gtacggaact tctcccttc cgcacgatac      360
ggtagtctac ccgggacacg ggccacttc tagatagctt acgaacgaac taataaccct      420
tttctcgatt agaataatga aactaacaaa ttcgaaaacc gccatattgg tattgccgag      480
cgcgacctct cgtcatgctc cggaccatag gcgtagagtc aatggatcag ctgatccgca      540
aacgatcccc ggcgacattc tgcgccccga gcctctcgat ttgcccgcgc catgaccgag      600
cgcgaaactgc tcgaacattt catggaactg ggatccagaa caagatcttc acctcctaca      660
tcggacaagc tggatatgata cggtcagccg gctcccatcc agcgcaacgt attggagaat      720
cctgcgtggg acaccnctat acgccttata agcg                                     754

```

(2) INFORMATION FOR SEQ ID NO:442

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 546 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...546
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:442

```

cggatctgga tacgcgatgc tgagaagaat cagctcgctc taggtacacg gcacgtatcc      60

```

tctatcagga	tgcactcgga	cgaatgaaca	tagcactggc	ttcaatgaaa	tggtacgccg	120
tggcgaggtt	ggccctatca	tgctcggcgt	gaccatcacg	atgtgagcgg	tacggacagt	180
cctttccgcg	agacctcaat	atcaaaggga	cggtagcaat	gtgatggccg	atatggccgt	240
gcagtttttg	ccggcaacgc	tgctcgcgga	atgagccttg	tggtcttgca	caacgcggcg	300
gtgtaggtat	cggaagtct	atcaacggcg	gattcggcat	ggtctcgatg	gttcggaacg	360
tgtggatgcc	atcttgcgct	cggccatgct	ttggatgtaa	tgggcggagt	ggcccgacgc	420
tcatgggcac	gcaatcccaa	tccatgacag	taagcgaaga	gttcaatacg	actcacgcgg	480
atggatacca	atcacaattc	catatctggt	agacgaaagt	cttcttcgat	tcgattctcg	540
accgac						546

(2) INFORMATION FOR SEQ ID NO:443

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 513 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...513

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:443

ggatatcttc	cgtggtacgc	tggaagggtct	gacggaagaa	aaccgcctgg	attcaacagg	60
cggatgtgcg	gaggcaaatac	gctgaaacac	ctgttagagc	actggcagcg	cgggaaaccg	120
acgaaattaa	agcagagttg	ggacgcgcta	cgaggaagag	gagaagaggc	tgaaaagcga	180
tgatcctcac	cctgtcctcc	gcttagctgg	gataaagctc	tgataggagc	aaaggatcgg	240
atcatccggc	taagaatcaa	caggcttttt	ggcagatgcg	aggctgtcgg	aacaagagac	300
cgtagcggaa	ggcgatcact	atttgtttaa	ccgtttcacc	gaagggagca	gctttggagt	360
tgagagaggt	agacagcgaa	ctggatcatca	aaggtttact	tcggctttgc	cctactacga	420
gaagtatgcc	gtggcgcagc	acgtataggg	gagcggctgg	cccgatcttc	taacgggtac	480
ggggccgtna	catttcgaac	atgtgctgga	ata			513

(2) INFORMATION FOR SEQ ID NO:444

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 669 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...669

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:444

```

acgaaggaac tgggtgaagtt gatcctgcga aagaaaggct tcggcgggctc gcttgtctgc      60
tcgatgtcgg cacggcaagc ggatgtctgg ccatcacatg gcacgagaac ttcgagccaa      120
agtatgggcg atggatattt cacccgagct ttagctacgg ctcgtaacaa tgtcggagaa      180
gacgaccgga tattttcttc gagggcgata ttctttctcc cgataatcgt tgggacgtac      240
tccccccgtg gacattatcg tcagcaatcc tccgtacatc atgcctgcgg aaaggccgat      300
atggcgtatc atgtgctggg acatgaaccg gccttggctc tcttgcgccc gaggaggatc      360
ctctcctttt ctacaaagcc attgccaacc ttccggcagc ggtaaactac gctccggcgg      420
acggctttat gtggagctga accgctgctg gccgaagcca catgcgaagt attttcggcc      480
aaagtgggat gtgtgaagtc cgattgcaca cggacctctc cggcaagagc cgttttctcc      540
ggcaaaatat ttaccgcgta acaaagcatg aagacagagg aggaactatg aatcgggatgc      600
aagcctactg cgcccgtacg gaacattgca gatcagagtg gcagccaaac tgcgacaggc      660
agggacaga                                     669

```

(2) INFORMATION FOR SEQ ID NO:445

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 575 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...575

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:445

```

ccccgccact gtatcggtag agtaatgacg atggagactg tctgccaaat ccgaactccg      60
gaataatcgg catgctcgta tgcctcgtgc atcaatgcag caactgcccc gctcccgact      120
ttgtaccctg cttacagcca atagagtcaa taagaggaga aaaagcaaga aggggagaaa      180
aattcgtctc atcatacaat atatctgcta aatgctatac tcatctctct cacatacgat      240
caaaaacgga gaagtgtaca tagcgttttg gattggcttt gaggtcgcgc aatatgcatc      300
cgactcga ggcatactat ccagtcgcat gtagagcgat ttgcgtttta gagcatcccg      360
agcgaaccgt tggaattgcg aatttgatcg gaaagcttcg aagattctct gatgtagcct      420
gtaattcggc catcagagcc tcagtttcaa ctggttcaat tcttccgaaa gcattgccac      480
attatccgta tggtagcgtg tattggccat gacggcaggc aattgcgtcc cgatggactg      540
gtccaaagaa gcnagtcaaa cgaattaacc cgttg                                     575

```

(2) INFORMATION FOR SEQ ID NO:446

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 766 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...766

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:446

cgagcgtcgc	tatccggcct	tgggcaacct	ggtgcctcgt	gatgtggccg	ccgtgctgcc	60
aaagaacgtt	gcgatgccg	ttatgggtgtg	aacaatacgg	ccttgccgta	ttcctcgact	120
tccgcgatgc	catcaaact	ttgggaccga	cgtgggtggag	cagaagtacg	gcaacctctt	180
ccagatgtat	gagaagtcgc	agatgagaat	ccgtacgaaa	cgccgatgat	gatctatccg	240
gctatcacta	tacgatgggt	ggtctctggg	tggattacga	gctgatgact	accacccggg	300
cctgtttgcc	atcggagaag	ccaacttctc	tgatcacgga	gccaccgtct	cgggtgcttct	360
gctctcatgc	agggctctggc	tgacgggttac	ttgttattcc	ttatacgatg	cagaactatc	420
tggccgatca	gattcagggtg	cgcgcttcag	cacggatcgt	cccgaattcg	aagctgccga	480
gaaagagttg	aagaccgcat	aacccgtatc	atgaatgtca	aaggcaataa	gtccgtggag	540
accttcacaa	ggagctgggc	cacatcatgt	gggacaatgt	gggaatggac	gagacaaagc	600
cggtttgga	aaagccattg	tgaagctgga	cgagctgaga	aagagttctg	gagcaatgtc	660
tatgtgccgg	gtgaagccaa	tgacctaacg	tagagctgga	gaaagccctt	cgattggcgg	720
acttcatcga	gatagtacgc	tgatggcgca	cgatgccatg	gaccgc		766

(2) INFORMATION FOR SEQ ID NO:447

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 661 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...661

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:447

cggcaagacc	tatacaacag	cttctatcgc	tgtgcatatg	tgcaacaaga	ctttacagat	60
tataccgacc	acagcaaagt	catagaagag	tacgaacgct	gagagatact	ggtcaaatag	120
cattctgtac	cttccaccag	tcaatgggta	tgaggatttt	gtggaaggat	tgaagccaga	180
agtgaaaagt	aacaattgga	atacaatgtg	gaaaatggga	atcttcaa	ccatctgtga	240
acaggaaaga	caaaggaaga	agcagatatc	attacttgta	ttgacaagta	tctgagtcta	300
tcaagggtta	tgaaaacaag	aagaaaattc	caacgatttc	cggagggtcag	atctgtgggt	360
atgggtggata	gagggtaatg	acacaataag	catcgcagtg	ccattttctaa	aagtgaaaaa	420
ggggagcagt	attcactatc	acacttaaca	ttgagaaagt	caagctgcag	gcaattgggtg	480

```

aagctataga aataactggc gacagtatgc acaagcattt atcaatgccg taaagaaagg 540
taccaacttg acaaacaaat ttcagacaaa ccttatgttc tcattattac gagataaacc 600
agagggtaat gtgtccaaaa tattcggaga acttatccct tacttgaagc tggataagcg 660
t 661

```

(2) INFORMATION FOR SEQ ID NO:448

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1048 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1048

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:448

```

ttgatccagc tcacgggtgt ggccagtcgt cgagtgggct tactatatgg ggctatgctc 60
attgtgcttg gcttggtccc gggatcggc ctcactcttc tctgatgcc gatccgtatt 120
aggaggagct acgctgctga tgttcggact gagccgcagc cggataacgc atcattgcag 180
ctcaggatat agaccgaggg ctacgatgat tttggccatc agtctgtcac tgggcttggg 240
tgtcggttga tgccggacat cttgcgcaac atatctcttg acctgagagg tatctctctt 300
cggaattac gaccggcggg cttgctgcca taatttctaa tatcttatcc gtggcaaata 360
gaaccggcgg acaagtagaa aacccaatct tttcttatgg aattgctcaa acagaggatc 420
ttgcaagatg gcaagtgcga tccggcggtg tattgaaagt cgatagcttc atcaatcacc 480
agatggattc aagctgatgt accatgtggc cgaagaattt gctcgtctct ttgccgacac 540
ggagtcaata agatcgtcac gatcgaagcc agtggcatag ccccgccctc atgggtgggtt 600
acatcatgaa tctgcccggt gtcttcgtca agaaaaacag cccaagacga tggataatat 660
gctgactacg acagtgcatt cctttacaaa agccgagact ataccgtttg tatcagccac 720
gactttctga cggatacgat cgtattttgt ttatcgacga cttcctcgct tatggcaatg 780
ctgccaaagga atcatcgact tggccgaaca ggcaagtgct aagatcgctg gtagggcttt 840
atcatagaga aagcctttca gaacgggaga gaggtctctac agaaagaggt ataagagtgg 900
agtcgctcgc gatcatccga agccttgaca atgctgcata actattgcag acgaaaacga 960
agactaacca tacaccattc aatacacatc ccgctccgctg gctcagtggc gggatgttgc 1020
tttttccttc cttttctccg aatataaa 1048

```

(2) INFORMATION FOR SEQ ID NO:449

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 413 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...413

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:449

ccggacatcg aataccgact gtccctccgg aggagtcggc gaagtctcgt gcctccgta	60
ttgagttcct ccttcagctt gttttgttta tccttgatgg atcgaatcgg taacaacccg	120
acagcaatac tcccaaaacg aatatgacgg tatgccgata gtcgaaaatc tttgcttcat	180
tatgtggtga ttcttccctc tacatcggtc gatgattgtg cagggggata tgatgctttg	240
ttactcttac tctttttctt cgatctgcga gccattcgct cctcgtatcc cctgtgaggt	300
cgcgcttttg cttctctgcg ggttttacct ttccgggataa gcttccgggt tctgaatcgg	360
gcatactggc tcaacgaagt ggacttaccc aatctttcgg cctggctggc aag	413

(2) INFORMATION FOR SEQ ID NO:450

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 539 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...539

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:450

gtcagtcagg tttctttgaa gggattatac gatggatcca gatctacggc ggacgaacta	60
cgtttttccc cgggccttga taggcaggga tgctgatcgt tctttgcggg cgaagtcaat	120
ggccgggtact gcattgctgg agctgaggct tcacgaatga ccacaccgat gagtttgaaa	180
atagcctggt cgctcggaac ttgatttcag ttttggtcgg gtggatattg acatcgatct	240
gggaggttca agatcgaaat acaggaagta attgggcacg gttccctgag gaatatcgcc	300
tcataggcag ccatcacggc tttgtggaag taaggatgac gcagaagcgt ccgttcacga	360
agaagtattg cagggcacct cgtttgcgag cacatcgggg cgccctacga agccggatat	420
attggttatg gggcttttca tccgatgggt atcagatcct tctccattct ctccccgaat	480
acatcgagga tcttttcttc agaggaagaa aggaggcaga tcctgcacca gttaaccca	539

(2) INFORMATION FOR SEQ ID NO:451

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 676 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...676

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:451

```

ccccggtttc cggagaaaaa ttttatcggc atcgacatca aaggagctcc atgtgggccc      60
gtgccaaaga gtctcttcaa gaagggatgt ccaacgtact ttccttcgga cggatataga      120
gcttttggat cggttctttg ccgaaggag gtagccgaaa tatggatcac tttccccgat      180
ccgcagatga agaaagaggc aagcgactga ccggaacgcg gttcctctcg ctctatgaca      240
aagtatcgaa agggggggga cgtatccatc tgaaaacgga tagccctttc ctcttaccta      300
tacgaaggcg ttggtcgaac tcaacggcct gcccgtagac gagtaacgga tgatctgtac      360
ggcaaaggat gcgtagagaa tgaaatcctc ggatccgaac atattacgaa caacagtggc      420
tggaacgagg tctgacgatc agtacatcag ctttggcttg ggagaacctg actgcgagta      480
tcgagaaccc atattgaaat cgaacctgac agctaccgca gttacaatcg ctccagaaga      540
gtcaggcagt tccttcctaa taaataacct actcagaaca tggcatacta acattatata      600
ccaatcttat tctcgaagcc cttggtaaag ttcgctaccg gggacaggaa aagattggtt      660
tcggccggaa tggtag                                     676

```

(2) INFORMATION FOR SEQ ID NO:452

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 638 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...638

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:452

```

ttgtgacaga ttaccatcgg cacaccgaga tgtttggcat agctattgga cgcttcgtac      60
ctccgacatc aggcgtagct actacgaggt tctctaaggc atattcttgc ggatgtattc      120
catgaaaacc gtagagccgt agagatgtcc accggcacat cgaagaaacc ttgaatctga      180
tccgcatgta ggtccacgtg atcagacggg taatacctgc cttgcttagc aggtcggcga      240
tcagctggcg ccgatatata cacggggcct gtcctttctg tcctgtctgg cccaccgaag      300
taggggatga cagctgtaat gtagtgtagc gaagctcgtt tgggtgcattc gatcatcagg      360
agcaggttca ttcagggtgg ccaagaatgg gatgtggact tgtacgaagg aagacatncc      420
ggccgcgaat gctctcctca tggatacggc aaattcacca tcggcgaagt gctcgatatt      480
cattcgcccc gagggcaacc cagactgttg cagatctttt ccgcaagata acgggaattg      540
tcccggagaa gacagaaaag ttgttttcgt tgttcatctt tgatatgggt agagttatcg      600
tccattgccc gcaaatcggg agccgtcaga ccaccttg                                     638

```

(2) INFORMATION FOR SEQ ID NO:453

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 688 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...688

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:453

```

cgtgtgagca acactttcct tggggccatg cagaccacga gcacttgctc acttgccacg      60
gagaggggtga gatcatcacg aagccatgct ccaagtgtag ggccaaggtg tggagatcgg      120
cgaagaggtg atctcattcc acatcccgcc ggtgtagccg aaggaatgca aatgtccgtg      180
aacggcaagg gaaatgcgcg cccgaggagg cgtgaatggc gacttgatag tcgtgatcgc      240
cgaggaccgg atccgaatct gatccgcaat ggcaacgacg tgatatacaa tctgttatat      300
ccgttccggt ggctataaaa ggaggtagtg tggaagtgcc gacatagacg gacgagccaa      360
gatccgcacg gaggcgggga cacaaccggg cagatgctgc gtttgcgcaa taaggggttg      420
cccagcgtaa acggctatgg ctgggagacc aactggtgaa tgtcaatgtc tatatccccg      480
aatcgatcga gccaaagatg agcaggctat cgcagcgatg gaaaactcgg acagcttcaa      540
cctaccgatg ctgctcgtaa ggatatagac aagaaataca gagagatgtg gattgaaaga      600
caatgccatt gtatggtact tgacctgaga aaagctgcgg tatccggtat gcagtttgac      660
aaacgaagtc tttttgagcg atgaacac                                     688

```

(2) INFORMATION FOR SEQ ID NO:454

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1311 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1311

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:454

ggaaaagttgt	attcgggtca	tgcttgcttg	ctgcgcctgt	ccgtttctcc	aggctatgta	60
ccgccagcgt	gaaaagttgg	agaatatcac	agttttccca	tgttgatatt	cggcgacggc	120
gccgcacett	gtccccgaaa	tgcgttccat	gtacaccgca	ctctcaactt	ccttgagggc	180
aactcccgtc	cggcaaccgt	gaccgtcgtg	tcgatttcat	tccctgccac	ttccacgagg	240
taccgaactg	tttcgtcagg	gattctttcc	attggatgta	gccgtagtgc	aggttctact	300
cctaacgaag	agggttattg	ctctttcgga	gtttcctgcg	actcacaaaag	gctgccgccg	360
agtgcgctcc	ggtagtagta	gccgaggtga	acagcaaattg	ccattcatcg	gtggtgaaaa	420
cctgattcac	atctccaaac	taccatatac	atcgaagtgg	acgagccgat	tgcagaagta	480
ttgcctcctg	tatcagcgac	cttgaactga	ggataggtca	gaattgtgcc	tcactgatca	540
agacggcgat	accctccagt	tgggtatcgg	cggtatcccc	gacgctgttt	gcgtgcattg	600
gaagggcata	aagatctcgg	tattcacacg	gaaatgttac	cgacgggggtg	atgcgtatga	660
ttcgcaaggg	gattatcaac	gggaagaaaa	aacattgcat	cccgaaaaag	tcgttacctc	720
gctaattcttc	ggatcaaaga	attgtacgat	tttgtcaata	acaatccggt	gatagaatgc	780
tatcggtgga	ttatatcaac	aacccccgatg	ttatcggtaa	gaatgaccgc	atgtttctat	840
caatttcctgc	ttggagatgg	atctcatggg	gcaggcagct	tcgagtcgat	cgggtacgaa	900
cagttcagtg	gatccggagg	tcaagtcgat	tccttcgtgg	ggccaagcgt	tccaagggag	960
gaatctccat	tatggctttc	ccagtacggc	caagaaaagg	actgagagtc	gcacgtttcc	1020
cattctgaag	agggtgcttg	tgtcacgacc	ggccgtaacg	aagtggacta	tgtggtgagg	1080
aatatggcgt	agcgcgtctg	cgtggcgcaa	cgcttcgtca	gccgtgcgaa	gccttgactg	1140
ctatagcaca	ttccgatttc	gaccggccct	tgaggagaaa	tccgccgacg	cttcgaataa	1200
gtcggaagga	ttttaggcct	tatataacgg	attcgaagcc	atgttcaact	acattgtgta	1260
catggcttcg	tatgttaacg	tgagttcaat	gtaagcgata	tggtgccgat	t	1311

(2) INFORMATION FOR SEQ ID NO:455

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 562 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...562

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:455

cggcaaaggg	caggctgcga	gcaagccgct	cgagggcatc	gttgttcagc	cgaatccgaa	60
atgacgagct	aacaggatat	aggccgttgc	attccaatca	tggacgtaga	cagatagagc	120
cgatccactt	cggcagcctt	acgtctccatc	gttctacgac	gagcgtgtcc	agccagtcgt	180
ggacttcgag	gctatcagtt	catggagcct	gtccttacaa	cccggcaaaa	gggacgtccg	240
gagcaaaagt	cggcgtttgc	cctaagccgt	tcgtctacat	gcataacgca	aacgggacag	300
gttcaccgct	gattcgggtg	cgtatcggga	ggtcacccgt	ctcaccacat	ggagtactac	360
attgtcataa	gccggatcga	gatgatgcc	gtacggaccc	aatccgaagc	cctgcaatga	420
atctctacgt	tgccggccca	gggagatcgc	ccactttcac	cttggcggtg	aagaaatcgg	480
ggccactatc	cgattgagca	ttcccggatc	aatgacctna	ggctccaaaa	agaaagcatc	540
ggcccatagc	ttaacgagct	at				562

(2) INFORMATION FOR SEQ ID NO:456

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 536 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...536

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:456

gatccccgtc	cggtcggtgc	cagcagttca	caatctgctc	cctgctcgaa	atagtctgca	60
ccacagaagc	gataagctgt	gtcttaccgc	taccggcaat	ccgcgaagca	aaaaaaccga	120
ataaggttcc	ctgtcgaaca	gatacttgcc	aaagatcgaa	tagccgaatc	ttggctttgt	180
gtcggggtaa	acggcaattt	ttcaatattt	gctcggccaa	ataattgtcc	atctttatac	240
aaatctatat	ttgcggggac	taagttactt	cctttgaacg	atatcctcgg	attcgtgggg	300
caatacggat	taggaagcgt	ctttagaaga	gattttaata	caaacaaagt	aagataacga	360
tgaagacttt	aatcaagatt	ttggtggctg	tacagtcgtg	gtgttgcat	atctcacgct	420
gatgagcata	tatacccccg	tagtttcgac	aaagattcag	gccagtcgct	gaaacaagct	480
atccaaaaga	gctgaaaaat	atagctgact	atcaaagctg	cattcgaaag	catgta	536

(2) INFORMATION FOR SEQ ID NO:457

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 550 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...550

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:457

tccccggctg	ccgactcata	tccgcaaagt	cctgtcccgg	ctctttggaa	ttctttccaa	60
aatgagggat	agcagttgca	actgttccat	tacgacagca	ctgcaggggg	tatcattccc	120
agatcctcta	cacagacgag	catatcctgg	aggaaagcag	cggatcagc	cgcgacagtg	180
cctcttgctt	ccacagtcac	cgttccgctt	gtggaagtag	tcgtccgaca	gacgctgcca	240
agcttctttt	cctccaagct	cagatgagca	tagcgaaaag	acttttcgaa	atgggtgcgtg	300
gatggaaggc	cccgggcttg	cctgattcta	ttacgaaaca	tactctgtgg	ctacacgcac	360
caaacctctg	atcgtgtcct	ctcctccgac	aaggctgtag	gatctaacgc	tgctatatcg	420
gtctgataga	aattcttcgt	cccagcgtat	aataatccga	atcgaacgga	cgaagggtatc	480

gacagcatac tcgcttgcat agcgtccgaa aatctgcttg aggtcatctg catgaacgag 540
cggaaggaggag 550

(2) INFORMATION FOR SEQ ID NO:458

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1099 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1099

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:458

tcctgggatac	aagcaaattc	aggtaggtga	gcctagcccc	taccagcoct	ttccaacttg	60
acagctacaa	cgcagggtca	gaaagtaacg	ctcaagtggg	agcaccgagc	gcaaagaagg	120
cagaagggttc	ccgtgaagta	aaacggacgg	agacgggtctt	ttcgttacga	tcgaacctgc	180
aaacgatgta	cgtgccacga	agccaagggt	gtgcttgccg	cagacaacgt	atggggagac	240
aatacgggtta	ccagttcttg	ttggatgccg	atcacataac	attcggaagt	gtcatccggc	300
aaccggtcct	ctctttaccg	gaacagcttc	ttccaatctt	tacgtgcgaa	cttcgagtat	360
ttgatcccgg	ccaatgccga	tcctgttggt	acacacagaa	tattatcggt	acaggacagg	420
gtgaagttgt	aatccccggg	gtgtttacga	ctattgcatt	acgaaccggg	aacctgcac	480
cggaaagatg	ggatcgcagg	agatggaggc	aaccagcctg	cacgttatga	cgatttcaact	540
tcgaagcagg	caagaagtac	acctttcacg	atgcgtcgcg	ccggaatgga	gatggaactg	600
atatggaagt	cgaagacgat	tcacctgcaa	gctatactat	acagtctatc	gtgacggcac	660
gaagatcaag	gaaggtctga	ccgaaagacc	taccgcgatg	caggaatgag	tgacacaatct	720
catgagtatt	gcgtgaagtt	aagtacacag	ccggcgtatc	tccgaagggt	tgtgtggatt	780
atatcctgac	ggagtggcag	acgtaacggc	tcagaagcct	tacacgctga	cagtgtagga	840
aagacgatca	cggtaacttg	ccaaggcgaa	gctatgatct	acacatgaac	ggtcgtcgtc	900
tggcagccgg	tcgcaacacg	gttgtttaca	cgctcagggc	ggctactatg	cagttatggt	960
tgctggtgac	ggcaagtctt	cgtagagaaa	ctcgtatca	agtaaactctg	tcttggaactc	1020
ggagactttt	gcagacactt	ttaagatagg	tctgtaattg	tctcagagta	tgaatcggcg	1080
cccgacctcc	ttttaagga					1099

(2) INFORMATION FOR SEQ ID NO:459

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1133 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1133

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:459

```

gctaactatc aactgtttgc aactatttta taggactttc attgaagtct ttgccgcaga      60
gctgattctt aagtgttttt cagattactt gaggtttgag agagatcgca tgaagctctc      120
ctttcttcgt caaatcaatg cttgtgttgt cttgatcaat atgagagggg gttattgtgc      180
aacggctctca agctgtaaac cggcagctgt gtatagaaac agtctttcgg tgatatggca      240
atcgacttcc taactgcccc aattttaccg gacagcaata actgattata tgggttagtc      300
catcggggcgg actttctctt cgacaaaggc gatttcgctt tcgttaagcc gtatttgctg      360
tagagttggc gatcaatttc cgccaccggc tgggtccaatc gatgtccgat tctgctgtga      420
agtcttgacg ggggactaat cccaagtttc tttggggtta tcttgcggtg ccttgaggat      480
acccagcatc tgcgagcaaa cttcgtcttc acatagcgca gacaagcctc tgcctcgttc      540
gggtgtcgaa tgccccaata ctaatgaagg tatcagtata acccataacg gcgtgccaat      600
aattggtgtg ctgagtactt caccgattgc ccccgagcat ttgtcttggg gataatcacc      660
ttgtacttgg caaaagttct ctggatgggt gatgtaacta cgcttacacc acttatagca      720
tctttgctta ttggccgtcc atagatacat gccatcttct cttcccttcc ttgagggtat      780
tcataaagaa aacctcagga aacacatcaa agatattggc accaaagctg tactgtgcc      840
tgcaacttgt cttccgttca aatcgggatg ctcttggtag agtcgtctgt aatacgatag      900
agctctcgag gtgcaacaag gtttgaaaat gtagaggatt ggtttgctct actttataca      960
gaatatgatg aagctcatca aggcgaaaaa catcccaatc ggtccaagaa tcattttctt     1020
gttcagtag aggttgcgat tctctctttt acatctacag tagggaagac ctccgcacat     1080
taggccaata atcgactact ctataatgtt gtcccaaagc atcttttatt cca              1133

```

(2) INFORMATION FOR SEQ ID NO:460

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 421 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...421

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:460

```

atcagctctg cggcaaaaga cttcaatgaa agtcctataa aatagttgca acagctgata      60
gttagcgcat tgatgggagc agaatcagct gacaatcggc cctgcacggg tgcaggaagc      120
aagaatcagc tgacaatcgc gtccctgctcg tgacaggaagc aagaatcagt tgacaatcgc      180
gtccctgcac gtgcagaagc aagaatcaac tgacaatcgc gtccctgcac gtgcaggaag      240
caagatcaac tgacaatcgc gtccctgcac gtgcagggag caagaatcag ctgaaatcgc      300
gtccctgcac atgcagggag caagaaacag ccgacaatcg cgtctgcac gtgcagggag      360
caagaatcaa ctgacaatcg cgtccctgcac cggcaggaag caagaatcag ccgacaatcg      420
t

```

(2) INFORMATION FOR SEQ ID NO:461

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 635 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...635

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:461

```

ctagaggatc cccggcaggg gattcccgtg aatataggtc cactgggcat ggcattcagg      60
cctatatctg actccaaagc ggaagtgatc caccacgcat ccccatggat tcggcaatcc      120
ttatccattg ctccgtgccg taaaaactcc gacaagtga ggccttgagta cgatacaggc      180
cggacggata taagccacat ctcccgtttg gaagtttcat cgtataagcc tatcaattcc      240
tcatcaaggc cacggcaaca ggggcattcg ccgcaatcct gcgcatagcc gcgtattccc      300
gtccctgacg ggttgctcca ccgaatggat accgaaggcg gataacgttc caatttatac      360
atcgccctct cttcttcgaa agccccgttc gctcgagacg aataacggca tccttcccga      420
atttctcgcg gaccatccgt acaaagcgag ttccgattcg aaatcgatag ccccgatttt      480
aagttttata agcggaaaag cctcctccag ttctctctcc acacgccttc gcatagcttg      540
aagcttccca tccatatcaa accgttatgg gaatccccgc ttgcgggagt gaaagccgag      600
ggaaaaagca attccccggc ccttgaagtc ggcaa                                     635

```

(2) INFORMATION FOR SEQ ID NO:462

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 307 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...307

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:462

```

acgctgatca acaagaaata cacgaagcga caaaatgcc a tcggcgcccc gcttatgacg      60
tgattctctt attcaacgcc agttcgatct aagcgaacta ccataaaaat aacaagtagc      120

```

tgtaaatacat	actcttttgt	gattctcggc	tgcataatga	tcgggaagaa	ggggcggctt	180
ccaagtcatt	gggcttagat	gtagataaaa	agccatctga	aagcaatata	agtgtctgaa	240
aaacatgtgt	ggaaaaataa	acacactaat	aaccaatgtg	ttgtgccatt	ccttatatcg	300
aactcac						307

(2) INFORMATION FOR SEQ ID NO:463

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 509 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...509

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:463

aataaaacac	actaataacc	aatgtgttgt	gccattcctt	tatatcgagt	cacgttaaga	60
aaagaccaat	ggtcatatcg	caaaaatgcc	gtacaatgtc	tctaataagc	cccctgggcg	120
atgttgtaact	tcttctcgat	ggcatactgc	tccggggctg	ccgaggtatt	cttcacaaat	180
gtgaagacgc	tcggaacggt	caaatgtttc	gacatgatta	ctgctttttt	tgacctctcc	240
gattcgtaca	cgtcagttcg	taaaaatgga	gacctttgca	aaataaggag	gtgggggaag	300
aggagttctt	ggcaaaaaag	gagcgagtga	aaggggtggc	agtaggagtg	aaagtagttg	360
taaatccccc	cttgaggagc	tgcttgcaag	agtcctcaag	gggggttatg	ccttatccta	420
gagatgagga	cataattatc	cggggtcctg	tataaattaa	aggcgatgct	ttcaagaatg	480
ttttgagtat	ggtcttgcca	agtccccgg				509

(2) INFORMATION FOR SEQ ID NO:464

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 519 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...519

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:464

tctcaagggc	gagaacattc	gccccctcgt	aacgaaactc	ggcgtgacgc	actcgttgac	60
agactggaag	agaacaataa	ggccttcgcc	gacttcttct	ccgccgtctg	agcaccgacc	120
aacgaggcaa	atatgacgtg	aaggcacccg	tgccgagacc	gaccgcacat	tggtagccgt	180
ggtgcgccgc	atggacccat	cgacgacatg	gagccgagcc	cggagatccg	tcgctcctc	240
gagcttacaa	ccgactcgtg	gccaatcgcc	gcgccctctt	ggctcgtcgc	gccactacgg	300
agaagcagcc	gtggagaagc	gtcgtgccga	gatcgccgag	atgtccgccc	cctgctcggc	360
cggatcgtgg	aggagaagaa	gacggccgtc	ttgccggtcg	caccctcggc	acgggcaaga	420
accgccacta	tctcatcaca	tcgtagccga	gaacggcgac	gaggaggatc	gctggtaccg	480
catcgacggg	aacaactcgt	ctatgtgccc	gaagacgaa			519

(2) INFORMATION FOR SEQ ID NO:465

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 912 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...912

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:465

ggcccaaggt	cgggagtttc	gacggagggt	tcggttcttc	ttatcttgcc	gttgtgtagg	60
tcagaagaag	acgagggaga	tctggttttt	atgccgtcgt	ataccgctgc	ggaggccgaa	120
gctatgggga	tggtaaacaa	ggtggtactg	ccgcgaggtt	ggaggacgaa	acgggtggact	180
ggtgcaagac	gatattagcc	ggagtccgat	ggcgatccgg	atgattaaac	gggctttgaa	240
tgccgggtcg	acgggtcagag	aggattgatg	gagtttgtag	gggatgccac	cctttgtatt	300
atcttatgga	agaagctcag	gaggggaaaa	atgccttttt	ggaaagcgga	ctccggattt	360
cgacaagttc	cctaaattcc	cgggttgatg	ctaaggccga	ttatatcccc	tataccttga	420
aattcaagga	gccggcaggg	agtcgcgggg	cgtttttgcat	accaagcaga	cttatttcgt	480
gagggatatac	acgatacttt	cccctctcgg	gcagggttacg	gcgaggcggc	tttattccgg	540
gattgagtgc	ggaagagggga	gcggattacg	aagagcggct	ggcggagggt	gcaacggcgt	600
ttgcgggttt	actcccagcg	cctggcaggc	atatcctctt	tgtgtttcgg	gatggaaacg	660
gcgcttgccg	acttcgaggg	cgggggttgc	tttttccctc	ggctttcact	tccggcgagg	720
cggggattcc	cataacggtt	tgatatggat	ggggagcttc	gaagctatgc	gaaggcgtgt	780
ggagagaaac	tggaggaggc	ttccgtgtat	aaaacttaaa	atcgggctat	cgatcgaatc	840
ggaactcgtc	tggtaccgat	ggtccgcgag	aaattcggaa	ggtgccgtat	cgtctcgtatg	900
cgaaccggct	tt					912

(2) INFORMATION FOR SEQ ID NO:466

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 734 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...734

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:466

ccggaataag	cacgaattaa	tgtgttagag	atcctaattg	tagaaggaaa	gaccaaggcg	60
gagtacaacc	tttcaaatgc	gatagccccc	tgccgaagg	ccggcctctt	cggggaattt	120
tctgtagtct	ctgttgcctt	tactattgaa	attacaatca	cggttatctt	tctattataa	180
ggaatggtgc	ttcaaaacga	caaggagtc	gaggatcatc	atctgctatt	gagtctccga	240
gcttccaaac	aaggggggaa	aaccttatct	ttgtttgact	tagcattata	aagttgaagc	300
agttttcttt	tctgtctgtc	catttttttc	tattttcttc	cttttatggt	cggtgccgtc	360
tgctcgccag	accgagactt	ttgattcgcg	aggcagtcgc	ttcttggtac	tcctacaggc	420
acaaacagtt	gaggtatata	cctactacca	tataaatagt	ggggaaggac	tcgggattag	480
ttttgatctt	tgggcgatga	gagtatgacg	ctgggataca	gactgcagca	ctgtgggtcag	540
attggcaggc	gagtcgggtt	tctccggctg	aagctgtttc	cggttttcgg	agaacgaatt	600
cgatccgcct	gccgttagca	gagctacttt	ggccaacatg	gtcattacga	actggctttg	660
cccaatgcga	attgcacccc	aagctccggg	aatatctcat	gaccgtatcg	acgttatgat	720
ccggacgaaa	cgct					734

(2) INFORMATION FOR SEQ ID NO:467

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 943 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...943

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:467

tacagcttat	gaaaaagtta	ttctctttga	gtgcgggtcat	cgtactctta	tttccttgca	60
ttcttgccgc	cctcgcatca	tcaccgagct	gaacaaacgt	accctccttt	gcccgaaggga	120
acacctattg	cggtctacga	actcgaaacg	gtaagcgctc	cccttcggag	gctgagctgg	180
tagggaaagt	gaggatgccg	aatccgggtc	atccccggga	gtctctccta	ctcggaggcc	240
gtgcaattgc	tcgcgaagaa	accagaaaaa	gcggtgccaa	tatcctgtac	gtgacaatca	300
ccaacgaccc	tctatcttcg	gcagctccat	gcatacagata	ggcggttat	gctcttgtea	360
gattctgtcg	tgaggaaacga	gggagaaggt	taccgcactc	gcccctgtac	gattcgggtc	420
aaagggggaa	aatcggtctc	cgatcaaggc	tcccgtaac	gacctctcgc	tccatttcgg	480
ccctctatc	tcacgaatcg	gacaaaagg	ctgtcttatt	cggagcagca	gctggagaaa	540
agctaagcaa	cggaactttcg	ttcgtactcc	aatataaatg	tcaccggaag	ggaacctcta	600

cggattcggg	ctgatgcct	ctcgatatga	agccgactca	ctaagaaaat	cgaataccag	660
ggtatcggat	tcgccaatcg	attggatata	tcgctccctt	attcagcatg	agtactgctc	720
tttcggagcg	gtgggtgctt	ggataagttt	cggcttaggt	tatttgggct	tcaaacaaac	780
gctgccgaca	tatccgaccc	gaagagggaa	ggttacttct	ccggcagcac	agtggagcca	840
atacggcact	caacgtagga	tacaagctga	acaaacattt	agcatcgggg	gagagatcat	900
gatggtcggt	ggcgttttcc	atccggataa	ctaaagatga	cga		943

(2) INFORMATION FOR SEQ ID NO:468

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 524 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...524

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:468

gccagaagta	cgtgagcgag	ccgggtctgga	aggtatatct	ctctgagtgc	cttcccatgc	60
agcagcgctg	aagcctgaat	ccaaggctta	tgctgggtgtg	aatccctccc	tatggagaac	120
gtatcaaagt	gaggacatgc	agcagtttat	accatgatcg	gagagcgact	caagcataat	180
tatgcagggt	gctctgatgg	attctggctt	tcaagccgga	gcatttcaat	catatcggcc	240
ttcgtagtct	catcgagaaa	agttgatgaa	tgagagcttg	gaatgtgagt	tgccgggttat	300
gaactctttg	agggacgacg	cgattcattt	gccgaaagaa	aaatcgtcga	gccgaaggag	360
aacaaggcgt	aggacggaga	atcgaccgtc	gtacgtttct	gccggaaggg	aaaaacgctc	420
caactccatg	gacgagaaa	aaagtctcct	tatcgttctc	ctcgtcctga	taagcctttc	480
agaacttccg	taaaaggaaa	aaagagcata	atgatgagca	gcaa		524

(2) INFORMATION FOR SEQ ID NO:469

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 498 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...498

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:469

```

gggcggcgag cccggtttgga atacggccgc acgccaaggc atccgtaccg tgtctacttt      60
tgggtaggat ccgaaacggc tgtgaacgga aatcggcctg gcggtggaaa aaattctcct      120
ccaccgttcc gtttcgtgac cgtgccgctc cgtcatcgcg tggtcggac tgcccgaaaa      180
ggagcgaccg cgcttgatc gtggtacatc gaggagccgg atatgatcgg acacagccaa      240
acgccgaaa cccgctgaca ctggcaatgg tagagcggtt ggacagtgtg gtcgctattt      300
ccgcaagcgg ttggactctc tgcccatagc cgcacagacc gactcatcat agtatccgat      360
cacggtatgg ccacgtacga aaatgagaaa tggtaaatct gtcgcattat ctgcctgcgg      420
acagtttctt ctacatggcc acggggcctt caccacttg taccgaagc cctcctatac      480
cgagcgagcc atgagatc

```

(2) INFORMATION FOR SEQ ID NO:470

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 882 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...882

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:470

```

gaatcaactg acaatcgcgt cctgcatcgt gcagggagca agaatcaacg acaatcgcgt      60
cctgcatcgt gcaggaagca agaatcaact gacaatcggc cctgcatcgt gcagggagca      120
agaatcaact gacaatcgcg tcctgcacgt gcagggagca agaaacagct gacaatcgtt      180
tcttatttct cgcctattga cgaggaaagg gactacttct ctgatggaaa cttggggaaa      240
tttcttttgc tcggtaccca tataccggag gtttgacctt tcccgaagac actagaatca      300
gctctgcagc aaaagagctc aatgaaactc ccatgcaaca gtctaccgca gatacgattt      360
ctacaagaaa taatatggcg aagcgcaaga ctctatatcc aaggagtctg cgccttcttt      420
tttctaacc tcaacttttt agctctgctt agtgtcggaa tttttttaca gatgagtcgt      480
tctttctatt cctttccgaa aaccgcgtcc tgtatcgaag tcaaaatcat cctcatcact      540
tcttcccaac gattgcgaat cctgctttcg gaacgaggtt tcccggcatg cgttgcgacg      600
gaacctcttt gtgttggtta ggacgcggat tctttcggtt tcatcctgtc tgccctgatt      660
ggaggcggag ggagcgagcc gttcctatat ttgcgcaggg agatttcttc acgaatgaga      720
tccttgatag gaatgcaata tcatcaagaa gaacaatgtc tttttcgcag accaaatccg      780
ttaacgagcg attcgacat tgattttcac tcttccttcg gtgatgtatt tcttgcttcg      840
cggcgggagc cgagtcgggc atcgctaata agcttattaa tt

```

(2) INFORMATION FOR SEQ ID NO:471

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 511 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...511

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:471

```

ggggttctgt ataaattaaa ggcgatgctt tcaagaatgt tttgagtatg gtcttggcaa      60
gtccccggta tcgacatcgt ccgccatgaa accaccggga atactgcaa aggtgccgtt      120
ccgatgggtc tccgtatcgg accgattctt tgtttccttg cttctcttcc tcgggtcaatg      180
ccctgttgcg ttgtgcttgt gcatgatgcc gtcttgaagg tgatggggtt gcaggtagaa      240
acgatttccc cgcaagcata tcctttgtcc gccaaagacgg ttgcccttga gggttggttg      300
caccttgcaa tagcgcaata aactctttog tgtcactgcg gttgctgcaa gtcgttatca      360
ccttttgaaac aatgccttga acattgggtc gaaatgcttt ttgtatccgt agtgataacg      420
cttttggttg taaacccaac ggcttcttca tccgtccctt tacgcttgac ggacaacctg      480
tttttgataa cctcctctgc ctctttttcc t

```

(2) INFORMATION FOR SEQ ID NO:472

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1211 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...1211

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:472

```

ggctccaaaa tttggagcac taccgttttg ccaagaatgt gctgacgctt gtcgcacggc      60
aaatatcgct aaactgaatc ccaaactgcc cgagctggaa aggtatcgaa aatggaggat      120
ttggctctga atccgcccgt cgcaacagc tgacgcctca ggcatagacc ctgcacgagg      180
aacgcgacag agcctacagg cgtgatgtc gcgcgtgcgt tcgtatgctt tcgacgagga      240
cagccgctgc gcaacgcggc agccagaatc gaagacgtgg ccgctcgcta cggcacgtga      300
tccgaatgaa ctatgacaag gagacggccg cgatagagaa tttctcaccg atctcaaggg      360
cgagaacatt cgccccctcg taacgaaact cgcgtgacgg cactcgttga cagactggaa      420
aagaacaata aggccttcgc cacttcttcc tccgccgtct gagcaccgac caacgaggca      480
aatatgacgt aaggcactcc gtgccgagac cgaccgcaca ttggtagccg tgggtgcgccc      540
atggactcca tcgacgacat ggagccgagc ccggagatcc gtgcgctctc gagctctaca      600
accgactcgt ggccaatcgc cgcgccctct tggctcgcgc gccagctacg gagaagcagc      660
cgtggagaag cgtcgtgccg agatcgcgag atgctccgcc cctgctcgc ccggatcgtg      720
gaggagaaga agacgccgtc tttgccggtc gcaccctcgg cacgggcaag aaccgccact      780

```

atctatcaca	ttcgtagccg	agaacggcga	cgaggaggat	cgctggtacc	gcacaacggg	840
gagcaactcg	tctatgtgcc	cgaagacgaa	ctccccaagc	cgagaaaaag	aagaaacccg	900
caagcagcac	ggacactcca	tccgagccgc	cgctcctgco	gatccatcgc	aaggaggcag	960
cagtagcggc	ggtggcgagc	aggctctacc	ggcggcggac	tctgatcccc	ccgtgccgtc	1020
ctgccggccc	agcagcacag	gcaaccgagt	ataaaagaca	aaggggctgt	gaccaaata	1080
tttttggcac	agccccttgt	atattcgaaa	aattaggtgt	tagccctatt	agcctttttc	1140
tctgnttaca	aactatgtct	aaagaaaagt	ctatgcagga	cttanccaac	aaccgcattt	1200
tcttacttgc	g					1211

(2) INFORMATION FOR SEQ ID NO:473

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 512 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...512

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:473

ccgtgcgcgt	agagctaaaa	tcctctatag	ggataaagg	cgaatcagaa	ctgtattttg	60
ctcaagcaat	tggtataaaa	tagcattctg	cgcttattga	ttttgtttta	ttatctgcat	120
tcccagaggg	aagagtcggc	tgcaggggaat	aaggatcgca	gtggaatcgg	tttctgcctg	180
tcgcacatcg	ctcagcaatc	cacaggcttg	agttgccagc	tccttatctg	ctcgggcaga	240
tagaaaaagc	acccaaaaaga	attgccgttg	cagcaagcaa	caacccaaaa	cgagcatttg	300
attacgcggg	ccttccatag	aataatcttg	tgtcggattt	ctctctttgt	agaagaatca	360
aaaattgtgc	gcaaagataa	acgttacaca	agaacttgta	ttaaccatcc	tgaaacgaca	420
ggacaatcgc	atttgaaata	tagcctgatg	atgctccgtc	cggaataaac	acgaattaat	480
gtgttagaga	cctaataagta	gaaggaagag	ac			512

(2) INFORMATION FOR SEQ ID NO:474

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1949 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1949

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:474

```

eggcactactg aatgcctcgg gtcgctatga tgaatcatat ggctcgtata tttgatgctg      60
atcgtagaaaa caaaggcttg atgtagagca ttcaaacaacn ttcaacttca gggtcgggatg      120
taagcaataac cctacgatac agcgacttag gcatcgggtca gtagggagag ataggcaaac      180
ccatcttgggt aagccagtag gtgatgtctg ctacaaggag ttccccaggt ctttgaggca      240
caaactagggc tctgtattga gcaggctctc atacttgtag agcctatgcc gagattgggt      300
gtccgaggggc gcacagaccg tttgcgcagc atcataccat ggctctgagt agggcgcaaaa      360
agcgatcgcg cccaagcgtg aacttggggc cgagtattgc tgacaaagca ccatgagctc      420
tcggaagccg gcttgaggta gtgctctgct tgtcttaagt gccacaata ttggatgata      480
ctactgcata gacatcctcc tcatgttggt ctaaatcggt gagatgacgt ttataaaagc      540
ctgacggcta aagccaagca gttcgcagag tcgagcaata ggatacctgg ctccggctct      600
gataaaacggt gaactacttg gcttcggagt tttttcgatc tgaatgccgt aggtttcttc      660
tgccaactct acaagtagct tgtaggttga tgccctagtt cttctcgctt gagacgactc      720
ttgaggacac gatttcttta cgtagctgct ctaactcttc tttttcattc aggggtagct      780
cacttggggg gattgggaca ctttcatttg gaccggatga actttatctt cgatccaaat      840
ttactaagcc aagagcgaat gagaccatga cttagaccat attctgctca atggctactt      900
tgctatctga ccccgagagg taatcctcaa gatgctaagg cgttcaaagt tgtttaaatg      960
tttgcccata atggatactg ttgcatcccg cccaactgtc aacttttttc agtacacgtc     1020
aactttcttt gatttgtggg tcgacttttc ctgatggatc gaacgcttct tcttcgtagg     1080
tccggggcca tgcagagaaa atggtacata actaacggag ctttagcact ataaaagtgc     1140
ttagaaagct gtttttgatg cgtcaaccct gcaacagcct ctgtcatcta tttggagcaa     1200
attcatacc cttcgatctc agtcgaaaag caaaacggga aaaaccgaaa aaaagaatca     1260
cttcgatoga tcgcttttca tgctctgaca agtaaaaaaca acttgcatgg agaaagtatc     1320
ctttgcgaca ttttgtttgc cgcagagcag gcaaacagga ataagtctcg ggtgccatcc     1380
ttttgatgtt gaaatgcatg ttgcgaagaa gccttcgccc cttctttctc tcgcgacag     1440
gcatggaatc caaatatttt ggagcggaat tcttgtgaat gaaaaaaata tcggaacttt     1500
gcgcccggtt cgattgggtc tatcacctga aaattatttg atagggctcg tcgcattctg     1560
gtaaaatcac cttatcaaac tcagtatgct atgacggaaa aaactaccgt aaaaacgtga     1620
aagatgttgt agtccgattc tgccggcact ccggagatgg gatgactga ccggaacgat     1680
attctccgac ctttcggcgg tgtttggcaa caccattcca ctttcccgga ctatccggca     1740
gaaattcgtg ctccacaagg gacatgggcg gagtatccgg atttcaagtg cacatcgga     1800
cncgatctgg tactactccc ggcgatttgg ctgacgttct cgtagccatg aacctgccc     1860
tccaaagtta accggacaca cgtaagacgg gactncatta ttattantcg atctgactct     1920
ttatggcatc tgatttgagg aaagcagaa                                     1949

```

(2) INFORMATION FOR SEQ ID NO:475

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 691 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...691

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:475

```

gctgcgatag cgtcagttcg acgtgagaaa aggaaaggga gcttttagcgg cagaggcagg      60
attgctatatt caatatatcg gataagccgg cgaataatcg aaaccggata tcaccataaa      120
aataacggct acgatgcggg tgaaccacgt atgccaacga cattgatacg attgcgtagc      180
aggctgaaaa gataaggata agagaccacc agccaatcgc ccccaaagct atacctaaca      240
tgccgaggta taaccgacta acatcctccc cggaacatng gtgacgaagt tgaacgggaa      300
tatagagcga taaaaaagaa aatgataaaa ggggttgata gcgaaggcca aaagagctta      360
ggacggtatg ccatacagag tagttattat cctatcatcc accttgaagg tgggtgcagt      420
ccgatacaga tatataccga angaaacatg acgacactgc cgaagaagct gtagccaagc      480
ctcgttgctt tcaatgaagt tcataccaa acctattccc agatacgtga ccagtggcaa      540
gaagagatcg ctaagtatgg ctccgattac ccggtgtaga atccaatccg ccgtcccctg      600
tgcagagtcc ttcgaatacc acaaaattcc gatcggggcca taggagcccc acacgagaat      660
gccccatgaga ataccggtat agaaataagt g                                     691

```

(2) INFORMATION FOR SEQ ID NO:476

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 638 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...638

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:476

```

ggcgaaattg tctatgtgga cgtaactacc gaaggcgaaa cgctcgaggt gatgaggttt      60
tcggatcgat cgaagctgtg aagactgttt ccgacctgtg atgcctatcg ccggcgaggt      120
attggaagtg aacctgatc tggaagacaa ccgaactcg taaacagcga tccctacggt      180
gccggttgga ttatcagggt aaggctgcaa atgctgccga cttcgacaac ctctgagtg      240
ctgccaatac gaaaaactga tagctcaata aatgcagcct ttggtaagca tcatatgggt      300
agtacttccg atctgcccac tatggagaaa gccgcaaaa tgccgatgaa atgcagattc      360
cattcgagat gttggcgctt tcggnntaat cgctccggct gaagtagaga cttttgcaca      420
cgaggccaga gctcgcggta taaggtaatt atcgctgctg ccggtatggc agcttcattt      480
gtgtggcgta ttgcttccat gacgtctatt ccggtaatag gtgtacccat caatgccacc      540
ttgacggaat ggatgctctg ttagccatcg ttcaaatagc ttccgggacc ccgttgctac      600
tgtggggatc aatgctgcca gaatgcagca cttttggc                                     638

```

(2) INFORMATION FOR SEQ ID NO:477

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 491 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...491

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:477

```

ggacatgaac aaaatagccc aaatgagctg caatccggct gtcggaggat agctaagggc      60
cagatagtcg gggagataga cgccttaggg ggacgaatgg tatcgtcacg gatgctacgg      120
ccatccagtt tcgtatgctc aatcggacaa aggccctgcc atgtggagtc cgcgcgctca      180
gagcgaccgc atgcgctcat ggaagcgtgg cgcgatatag tggagcacga gcctaattctg      240
tacattggca ggacagtgtg cgctgcctct ctattcgtca gggtgccgtc gcggagtcgt      300
gacggctctc ggggtagagt ttcaggctcg taccgtgggt ctgctacagg cactttcctc      360
ggaggtgtca tgcacttcgg ggagcgtatg atgaaggagg acgaatagcc gaaccggctt      420
tccacggcat tcaacggagc agcttcgtga tctgggcttt cagaaccga cagaatgaag      480
accggggact c

```

(2) INFORMATION FOR SEQ ID NO:478

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 586 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...586

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:478

```

gggagagcgc atagcccgat ttgcagatat agaagtactc agctatcgac cgacctcttc      60
ggcacattga cccctaagca gaggatgctt tgctaccact atcggaagca gccctgcgag      120
gacgggatat tacaaccata cagaactccg ctacaacctc tgggtacgca gtctgatgga      180
gogtattttac acccatttag caagtcggaa cgaaccgacg acttttgccc tgctggaaga      240
atacccttct gcatctgggt tgccaatggc attcaccacc attacagcgg agccaattca      300
ttgcccgttt cagtcggggt ttcttgccgg cagccctgag agagcggggc tggagctgga      360
gccggaagag caggtgcttt tggagcgcgt atgtacgata cccgattttc tacccaaaca      420
gaccgagcag agcggcgaag agatattatc aaggcttctt cggtaatttt ctatgcaccg      480
ggtatcacc cagccgaagc ggaaagccat tacaaaaacc tgatagaaag cttctttccg      540
aaaacgagaa aaagcttgct cgcgagctt tcggactgga aatacc

```

(2) INFORMATION FOR SEQ ID NO:479

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 636 base pairs

- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...636

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:479

```

gcgatatact tgatggcata gtcaagcgaa acggaaaggg gttcgggtatt tttggcaacc      60
ctacaaactt gcctgcatgc ttgatataag ggccgaaggt cctacggcta ccattacatc      120
cgcatcctca tattgtccca gtttcttggc aggaggaata gttccaaagc ttctccagc      180
gtgatggatt cgatggctgt cccggctgga gcgaggcaaa ctgcgccttg ataccgtttt      240
ccttaccgtg cgacctttct gcaccatcgc tccgtagcgt cccatttttg ctacacagat      300
tctccggtca caggatccgt acccagcatt ctttcaccga tctctggtcg ggatcgaact      360
cgcatgcttc tgccaccaac ggggtggaatt tgtgtagaac cgaccgatct gcttctgcca      420
ttgcagtttt ccttcggcta ttggtcaaatt tctttttcca ctttggccgt gaagttgtaa      480
tcgatcacct agggaacgaa gccacgagaa agtcgttcac cacaagcccc atatcagtgg      540
gaggagctta ttcnggtcct gtccgttcag ttccgtttga tcgtctcctt atggcttttc      600
cccttggtgg attccagcag gatgtattcg cgtgtt      636

```

(2) INFORMATION FOR SEQ ID NO:480

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 350 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...350

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:480

```

atcggttttct ccaaccacca aagagcaaaa atgaattacc tgtacatacg attacacttt      60
tactctccgg ctttttttcc ggtgctgaga ttgctttctt tcttcggaca aactgcgtct      120
tgagttggac aggaatagag gcgatctaca ggcagagcgt taaacttgct gtatcgacat      180
ccggaccaac tggtgatact ctccctgttg gtaataatat cgttttggta gtctatggtc      240
tgttgtggcg gnattgctgg ccgacctttg gcgcaatgga ttgataacga tgcttgatcg      300
tcgttctcca atcggcctta tccactatca tcatactgtt tacggggaat      350

```

(2) INFORMATION FOR SEQ ID NO:481

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 823 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...823

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:481

tctgcggatc	agcaacggta	cttcgcgcac	ctcggcaaag	agtatgccgc	atcaaccctc	60
ctttctccga	acagtgaag	acnaccggcag	gcttacagat	cggactctct	tttgaatato	120
cccatcttct	ctgccatgca	aacgcaaato	gcgttcggag	cagtcgcctg	caaatacget	180
caagcgagct	tcgactgtcg	aagagaaaaa	agccctctat	aaagagatca	ggcaagcata	240
cagcatgccg	tggcagccga	taaggccatc	gcagcagccg	aaaacagcaa	ggccctacgc	300
tcaaggcata	cgaatacgct	cgcgacagct	tcgaggcagg	gcgttgtctg	cctacgaata	360
tgccgaggca	aaaacaaaat	acgccctcag	ccagtggag	aaacttcgtg	caagtatgac	420
ttcatataca	aagccaaagt	ttggatttct	atcaggggcaa	agacttctaa	aagactcaca	480
agaaagctat	tttgaaccct	cagcgagggtg	ttcatgagat	ctatcaggac	cccgacatct	540
agggtgctgc	gtcaaaattc	gttttgccac	agcacccttt	taacgtcatt	cgacgtaaga	600
aaacgccaat	gaataattct	tttcctgata	agagattatg	ccctaagatt	ctccggcaaa	660
tgtatagggg	gtatcctgct	tctgctggat	cgaaccaaca	ttgaaattcg	gattgctttt	720
gacagaatgt	tgacgcccga	caggaagatg	ggctatacca	cagggcaaga	tgccggtact	780
ccgtgaggat	gatgggctac	ccccgtatgg	ctcttcgagg	tac		823

(2) INFORMATION FOR SEQ ID NO:482

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 563 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...563

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:482

ccatggcact	ctgatgatcg	ataattccag	tgctttccgt	atgcaggaaa	cgttcccctc	60
gtggtgccgg	aggtaaattg	ggatgatgcc	ttggtacacc	tcgcaatatc	atctccaatc	120
cgaactgtac	aacgattcag	atgggtggggc	actcaagccg	atagaagacc	tttctcacat	180
acgtcgtgta	cacgtgccac	gtatcagget	gccagtggtg	caggtgcgct	gggtatggcg	240
gagttgtaca	gcaggcggaa	gagttggctc	ggggagagaa	gcctaccgtg	gacaattcgc	300
ttaccagttg	atgtataacc	tgattccaca	gatcgacgtc	tttcggacaa	cgactacacc	360
aaggaggaaa	tgaagatgta	tcgcgagacc	aacgtatcat	gcatagcgat	gtgatgggtga	420
gtgcaacctg	tgtgcgtgtg	cantgatgcg	tgcccacttc	gaggctatct	gggtggaaac	480
ggaacgcccg	tcgctcccga	agaagctcgt	gcagcctttg	ccaaagcttc	ccggagtgtg	540
cttgtgccga	tgagcccgtt	cag				563

(2) INFORMATION FOR SEQ ID NO:483

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 442 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...442

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:483

taggtattta	atgtcggatt	tatactaaat	aagtgggtatt	gggaataactg	aattgcacat	60
gaaaaagccc	tcgatacata	ggtgctttta	ttcattttata	tttgtgtatc	agccgattat	120
tccgtgtgtt	tatggtatga	tcaatgaaca	aagctatggc	acgacaagga	aatcatcta	180
atgaggcctt	tgaaaagaga	aggttatcgc	ttaggttgca	acttatacaa	agggatgaga	240
gtggaaccgt	gaacatactt	cttgccggcag	cagcctatga	actcaagaga	gctagaaggc	300
tcttttgac	tttatcaaaa	caatctgcga	gatactgttt	gctacaatat	ctccctaaaa	360
gggacttttt	aggggatgac	tatataggga	gttaaacaaa	gctatatagc	aatcgcccca	420
atcctatata	gcaatcaaac	ga				442

(2) INFORMATION FOR SEQ ID NO:484

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1245 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...1245

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:484

```

gccccacgat gagaagaata gaattgtaag caatcctcca cgatctcggg tctgatctgc      60
tttttcacca cgatgagaag aatagaattg taagcaaaaa tgagtccgaa ggaacgcatt      120
atcatgggag tagaccccg cacaatatga tggggtacgg gatgcttcac gtcgtgggga      180
atactcccg actcatgcta tgggggtaat acgtctggag aaattcgaca atcactatat      240
ccgtcgaaac gcatattcga caggattaca ggtctgatcg atgaattcct accgatgaaa      300
tggctatcga agcacctttc tttgggaaga atgtacagag tatctcaagt tagggcgggc      360
tcagggtgtc gctatggcag cggctttggc tccgacattc ctattacgga atatgctccg      420
atgcgcacga agcaagcgat tcaggtaatg gcaatgcgag caaagagcag gtagccggca      480
tgctccaacg tatttacgaa tacctgacga acagatgtta cctgaaatgg atgccacggc      540
ggactggcgg ctgccgtctg ccacttcttt cagacgtcgg gacctatgct cgttcgggcg      600
gatcggcagt caagaattgg aaagacttcg tcaaccgaat ccggataagg tacgctgacg      660
tttgtgtcgg cctctttgtt ttcttataaa acggaaccgg agaatcagag caaatcactg      720
gccaatcgc tcagccgctt cgttcgccct tgatcagatt gacatgggcg aagagcgggt      780
gcccttcac ctttcgatca tataggccaa tccgttgctc tgggcatcga ggttggagag      840
tcgatctgtt cgatgtcgcc tgtaaaaatc agcttgctac ctctcctgca cgggtgataa      900
tcgttttgat ttctgtgagga gtcaggtttt ggcttcacg acgataaata tcgtttccga      960
cacgtacgt cctctgatgt tgccaaagct tcgataacga gcttttcggt tttctgcatt     1020
tcgtccagct gcggagttcg ctgctatttt gagccaaactg tcctttgatc acattcagtt     1080
gtcgaaaagc ggttgcatgt atggtgccac tttggctttc tcatcgccgg caggaatccc     1140
aagtccttat tggccaatga gacgatgggc cgtgcagcag gatttgtttg taggactgtt     1200
cctgactgag agctgctgcc agagcagcaa tgttttgccc gtacc                       1245

```

(2) INFORMATION FOR SEQ ID NO:485

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 497 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
(B) LOCATION 1...497

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:485

```

aaggatgatg gaaatatttc attttcataa tagctgtcgg attagtattt gcatattgtt      60
gcactacgtc ccaaggggtg acggatacga gtacattggg tttgctccac gcaggctctat      120
gtagatattg agcatttttc ctatgacggg atgaatggta ctccatccga acctgtgctg      180
atattcagca attctttccg tatgcataga gtttgagatg cagaggagta gtatcaagtg      240
tgggaaaact ctgaagatgg gagaaatgaa atccccgttt tgtatctgtc cgtcggacgg      300
tattggacgg cattgccgat gagctcggcc aggcgggtat aaggtcggga gtttctccca      360
aaaggatgtc ggcatagtct ggcagttgtc tgggocatta gctttccagc cactottgat      420
agcccgcgta tgatgatatg tcctgtgccc gtaccggcgg tagatatcga caggtttggt      480
ctggaccctg tcgatag                                     497

```

(2) INFORMATION FOR SEQ ID NO:486

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 508 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...508

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:486

```

gggcgtttac cactaatcag aaaacaaatt cattggcttt ttcttacgtg aactgacgtt      60
atttttaagg tcaacgtaat ccattgagcc atatgggtaa tggaaaagcg caatttttaa      120
ttccccctcg tattcagaag aaactcgctg aatgaaccca caacaactga taagcatgca      180
attttaatgc gtcagcctag ggaatatgta actcggcacg gnctcggtaa ctactgtaaa      240
caaccaggca gacaaatddd aactatcgag gttaagcgtg cagcgtatgac ataaggcact      300
agtactacca aataaaacaa tcgagacatc gctctactaa taattcctgt caaactttat      360
ggacagaatt gactatcaaa ccctacaaaa aaacatctct gaatttgga aatatcgaaa      420
atztatgatt taagtccgca taacttacat cgaactcacc ttatgagacc tttgaaaaat      480
aaggagatgg gggaaaagga gaaagcaa                                508

```

(2) INFORMATION FOR SEQ ID NO:487

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 412 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...412

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:487

```

tgacagacgt tccggtaagg tgtccgagcc cgcaccacaa gctaccgaga agaggataag      60
gttgaagtcg aaccagaaga caatgggtatt tottcgggtgc agatatgtct gacggcaagg      120
aaagtatagc tcccaagggg catgctgaaa gccggatgag ggtgctcatt ccgcgaagaa      180

```

```

aacctataaa atacagtcct gtcttcacg acgaagctca aaaatggcga taagcgattg      240
aaaggtagaa ggtggtcatt gaacaacgag gcggtcgatt cttttatctt acagagcggt      300
ttcagcgagg atgaggctcg tcaccttcgg aaaaaagtca ggaaaagttt ccctgatgct      360
tatatcgtag tttatgaagc gggcaaacgt gtgagagaga tatattgaaa tt              412

```

(2) INFORMATION FOR SEQ ID NO:488

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 522 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...522

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:488

```

ggctgagagg tcaattcaat ttccactctg caccgtcttt cgtatcttta tcgtaaatec      60
cagagccgtg agttcgctgc ggatcttata gcttgctgcc aatccttaag agctttggct      120
tcggctcgga tacttaggag cagatcctcg ctttgccgaa ggcttcgctg ccaccggctg      180
aagacgcctt ttcattccga taccaagcag gtcgaacagg aagaggcgga atgtagtacg      240
cagttctcta agttggaaga agtaatgga ccttggtccat tgtgtacagc attattgcgc      300
gcgctgcata gaaaagggtt gctattacca ttggactgtt cagtcacgtg tcatggcata      360
gtagcaacgc ttacgcagat cgccaacctc taggaggtcg tgcgggcagt cttcaatcca      420
tcgagcaagg ctgctgcata cgcaagcgct ccaaaccctt ctctgccgct tccagagctt      480
cattgctgaa tctacagtgc ctcgatagtg ggctccgaga at                          522

```

(2) INFORMATION FOR SEQ ID NO:489

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 601 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...601

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:489

```

ttgcagaagt gatcagccat ttcaatgggg gcgatcagct acagcccaca tagtcgatac      60
gcgcagggaa tttttcgacc atcagcagca ggtgtcttcg acttttcgga ggtgaagggg      120
caggagaagg tcaagcgcgc cctcgaatgg cggccgcagg cggacacaat ctgatcatgg      180
tcgggagttc cggcagggga aatccatgat ggctaagcga atgcccgaa ttcttcctcc      240
gtttaactta gcgaatcgct cgaaacgacc aagatatact ccgtggccgg taagtgggag      300
tcaattcgat gctcctgacc caacgccctt tccgntcgcc ccacattcca tctcttccgc      360
ggcactcgtg ggtggcggca cttatccaca gccggagaga tcangtctgg cgcacaatgg      420
cgtgctcttt ttggacgagc tgccgagttc aaccgctccg ttctcgaggt gatgcggcag      480
cctttggaag tcggcagatc accgttttcg agagccagaa tgacgggtga ttatcctgcg      540
gattcatgct cgtggctgcc attgaattcc tgtccttgcg gctactacac cattccacac      600
g

```

(2) INFORMATION FOR SEQ ID NO:490

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 536 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...536

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:490

```

agatagcaga gggcaatccc atctccgagg gtaccctgcg gattggtggt ctccggtaga      60
tggcagccga tcccccggtg gccatcaccg tatgcttgca tagaaaacga ctccacgccc      120
atgtcccca tcccatgtac gtacgcccg caccgaggt cgtctatcag caattcgacc      180
gcttggtgat tgacaatata tctattgcag aagtttgag cacgctatcg atcataaagc      240
tcgtggcatc ctaccggtag aatcaccccc tgcattgcga atccgcttgt ggtgtgtccg      300
ccttcaagcc ccagagccaa taggccatca gcttcggtat cgaacgcata cccaacgga      360
tcaactcatt gatccgctcc ggagcctctt cgcaagtacc cttacggctt catcctcaca      420
aaggccccga cctgcttcga cgtatcggtt tagtggtgtg tcccgggtga tcgtcagcag      480
caggtaaccc tgcgactccc cttgtgcaaa gtacgaattg ctctcatggg atgtca      536

```

(2) INFORMATION FOR SEQ ID NO:491

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 641 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...641

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:491

```

gacgtcatgt cagcgaatcg atacaggaaa gcccggaatg tatttttgac caagtcgata      60
tgcttacatg agaggatact atggtctatt gatggaagtg ctatctgctc tgtgtcggat      120
ggcaggttcg gggagaggga gggtccggcg agctgtaaaa ccgatatagat agattgtcgc      180
acggcatttt ccgggaattt cattgtcaat tgactgnttt tcaagtggct ggatatagat      240
ataaaagtat caaaagtaac cgatacaggc tatggttcgg aggaaaactg ccattgatac      300
agcagataga ctgagagact tgtatcaatc ctcaatctta gccgatttgc ttcgacgtct      360
tcgaaaagct aataaaagtag gggttccatg ataagccggt tgcctaaccg actgtaagga      420
gcaaagaaag agggctgtga caaacccgaat tttagacacag cccctttctt ttggaatgcc      480
aatacccgcac taattaaaaa caaggcatcc aattctttct tgaatacgtc tttggactgg      540
caccacagag cttctttacc acttcgcccg ttcttgatga acaaaatgtg gggatattac      600
gcacgccata cttcatgggc aattccgtat ttgcatacaca t                          641

```

(2) INFORMATION FOR SEQ ID NO:492

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1137 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1137

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:492

```

gggccaaacc cgtagcagga atgaaaagaa gcagaaagag gatccggaaa tccggatccg      60
gtgcaaggat gttttcattg tttctttcgg attatcgggt gtttcgaaca ggcgttccag      120
actcatttcg tcttgatca atacctgctc gggttgctac cgctctgcgg cgaaacgata      180
ccggcacctt ccagttgtcc atcaatcgcc ctgcacgggt gtagccgata ttgaactttc      240
tctggtatta gaggtagatc cctggttgta gtttactacc attcgggcta cttctcgaag      300
agaggatctt tctcctgcgg attgaatgct ttccggtcctc cctttcacct tcgggcacat      360
actccggcag ctcataagcc gaggtatagc ttccctgtagc gaaatgtggt gagtgcaggc      420
ttcgcactcc ggagtatcga gaaagcgcac tgcagacgta ccgtgtcttt tccctgatag      480
aaaagcatat tccacggccg acgagctgat tggctcccg ttagatccaga atggttcgga      540
gtcgatcatg gagaatactt tgaaggcgat acgagcagga aagtctcgtt gatgataccg      600
gtgatgatgt ccgtggaggg ccgttgggtg gctaccacat gtgaatacct gcggcacgcg      660
ctttctgggc gatgcgggta atcggagttc tacctcctta cccgatgtca tgatcagatc      720
ggcaaactca tcgacatcag cagcatatag ggcaggaatt tatgaccgtg caagcggctg      780
agctgccact gataatctga tcgttgattt ccttgatgtt ccgaaccctg gctccgtcag      840
catgcggtag cgattgtcca tttcgatgca gagagagttc angtgggtac caccttggtc      900
atatccgtca cgatggctct gtcctcgctg gaagcttggc cagatagtga cgttcgatgg      960
cttcgtagac ggcgaactcc gcattctcgg gtctacgagt acgaacttca gttcggccgg      1020

```

```

atgcttctttt acaagagggga ggtgatcatg gcattcagac ccacggattt cccttgtcgg 1080
tagcacctgc tatcatgagg tgagggcatct ttgcaaaggc cgaagataac acttcgt 1137

```

(2) INFORMATION FOR SEQ ID NO:493

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 900 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...900

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:493

```

aacggggggag agactctgct ccggcagatg ggcggccaaa gaggcggcaa gtcggaagcg 60
atctgctcca cgaggctctc ttgcctgct ctgaactcat tcgtatcagc cggctaaaag 120
gtgggaagaa aagcatttgc ctttcctcaa ttgttttccg ataaaagcct tataatcacc 180
ttctcgcaat aaatccgaaa ggagttggcc ggattgttcg tttgtatgta tagacgggag 240
gctccctcct aagcatgagc tgatagagta gctgataagc tcgttcgtag gcgcgaaatc 300
cgggaaaccc aatatgctgt ccagctgggt gacggctaca agactacatg ttcgttatag 360
acttgccctt tgatcagttg cgtgccaaaca agatatccac ctctttcgtc tccagacgcg 420
ccagagcttc gtccatcttc gtgggctcat ggccatatcg ctgtccatto tgaggataga 480
gacggtgagg aacgtctttt aagctcttcc tctattcttt cggctccata cccacaggt 540
gcaggctgct cggctctcct acgcccgatg cccgcttgca ggagggacga tgcgcggaag 600
gggtctgctg tagccgcagt agtggcagac gagcataagg aatgcttggt ataggtgaga 660
ctcacatcgc agtggatgca acggagtttt cccacaaga gctacaaatg atatacggag 720
cgaagccctt tcgatttgga ggacgacggc catttttttt tgccgaatcg tctcttcaat 780
agctagacga gggggaaaga aagcagttca cctgcaccga cctgtctttg acgcgcacct 840
tgcccatgtc tatgacttcc aaatcgaatc gggggcggaac ccacgtccg gccagggtgat 900

```

(2) INFORMATION FOR SEQ ID NO:494

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1121 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1121

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:494

```

cagctcgatg gtcagcatgc ggccatagac ggatattttc ggctgtttnt ctgtgggtggc      60
nagacgatca ccgtctcgtt ttgtttcaat atctgggatgc ttcacggaat aggagggaga      120
tcttattgcc tgtttgcttc gtgctaccat tgccggcgta gccttnagca aacgcggggg      180
cgtcacatca taaggccccc ctccggcgta cccatattgg cacatgccga gagcatccac      240
aagccataat gacagctgcc acnacggcaa gctgcaatcg gccgaaacgg ttctttctcat      300
aaccctaaga aatatagggtg ctttgggccac aaaaatactg ttccgaccga tactttctccc      360
tctgccaaaa gcccccctgc ggtctcctcc gcccgacgcg ccacaggaag aaggaacaaa      420
acctcttgcg cggttttact cttgacgaac aatacaaaaag cattgcagcc atctctcctc      480
gctctgcatt tcgtccgtga aaattattgt ttgctattcc taaaaacgtg gcgcgaaaaa      540
tttccgctct cgcgcgagat tttttcaaaa ccggaaccaa aacgaaaaat tttggcgcgga      600
ctttttcaag attgcgggcg gactttccgg cgatttcggc tcgagatttg ttgttcttct      660
tttgtctaca atctttctta tgggtgttct ttgctccctg caaagaacgc aaggccgcta      720
tttgtgagat ttttttcgtt tttcttgctt ttccgggctt gttagataac tttgccctca      780
aatattattg tgtgagttat gttgggtcaac ttcactttta agaatttccg ctcttcagag      840
atgaaaaaac tttgagcatg gaagcttctg ccatcaaaga acttccaaat ctgtcattag      900
gaaaggagct tacaaactcc ttccggcagc cttttatacg gagccaattc aagtggaaaa      960
agcaatgctc tttttgcttt gccaaaatgc gtagcatcgt attggattcg gtaaaattga      1020
accctcaggt acttctttcg ttccgacccc gtttatgtt ggaatcgggg aatctgccaa      1080
aaaccaactt ctttttgga ataccaattt ttgaaaagac g                                1121

```

(2) INFORMATION FOR SEQ ID NO:495

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 624 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...624

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:495

```

gggcagaaca ttgcgcagca gaagacaggc ttctctaggc aggnngaagc actacgccga      60
cggctctgca cattagcatc ctcttgcttc accaagattg tccatccgag cctacgaaaa      120
caagcttgtc ctgaagaaa tccagatgac ccctgtcatg atcggccggc gttcgtcctg      180
actggtagca aagagctagc cgaaaggcca ctgagcaagg ctcccgccgg aacgatagaa      240
acgatgcttc gggagacaaa gaagctgcca ccggataggc cgaaacatcc tgtacacaaa      300
actgtaatgc ccgttgctgt atgctatttc agcggctttg gttccatatt tatctcaaaa      360
gagatcggct gatcgggcaa ttctttcagt ggtcaagtaa gatcctctcg ggaacggcga      420
aagaaccgtt ttgcgccctt agttgttcac ggtaagttcc gtactcatcc gattggccat      480
atcggcagcg taagacgtaa ttgatctccc tcaagctcga aaagtacaga ctccaaaatg      540
gaaagtgtac tgcgtgaagc tatgacgcgg gcaatcaatt gcaagtgtgc aacagggacg      600
ttgttggtta ctcaacttc atgg                                624

```

(2) INFORMATION FOR SEQ ID NO:496

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 489 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...489

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:496

```

cgctcacgct cggctataacc ccctcgccca tgaagcagct taagctggct ataaacttccg      60
aatccaacgt cctgcaatcg gccaaactgaa tccctaccgc tacagaccaa cgattatcaa      120
gtacagtatg gtaatcccga cctaaagcgg agaagcgtca ccacgtcggg ctctcctata      180
atcaatacgg agccaagtca tgettacagc atcgctcgac tacgacttct gcaacaacgc      240
catccgaatt acaccttctc cgaccgggcc aatcccaatc tgttccacca gaccatggca      300
atateggacg agagcattct ttcagettga atacctatgc cattacacgc cggccgtatg      360
ggtcaggatt atgctcaacg gaaatatcga tccacattcc aaaagagcga agcactcggc      420
attgatgtca attcatggtc cgcattggat actcangcct gatgttcacc ctgccgaaag      480
gattggact                                     489

```

(2) INFORMATION FOR SEQ ID NO:497

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 366 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...366

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:497

```

gttgaatgta nagaactgaat tcggccgatt cttcggattc gaaacgctgc ggctttctat      60
ttcgacaacg aactcatcga aaaaagcttg ctcacagcga tgaattgaag tggtagaatg      120
actaccagca gtgggtgtac aagacgctgc tcccgaactg actaccgagg aaagagcttg      180
gtcctaaagag aaaacttgac tatctaacca caaaaatggc attaatacag agtgtaggg      240

```

```

gctttccctt ataatcggcg aggatacctt cctcgccgaa aatgccacta ttgtggcgat 300
gtagtcatgg gcaaaggctg tagtgtgtgg ttcaatgcc gtatgcgagg cgatgtcaat 360
tccatt                                     . 366

```

(2) INFORMATION FOR SEQ ID NO:498

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 468 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...468

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:498

```

ggcaggtcga gatacagagtc ggggccggcc accacatcca cgtgatgttg cggatcaact 60
cctccttgac gcgctcggcc atgcagccca ataccccgta acgagacggg aagaagcccg 120
tcttttcttt cgtagcgagt ggtaatagcc agccggttca gcactttctg ctcggcattg 180
tccgtaccg aacaggattg accaggatcg tatccgcctc atccacgttg tccgtgaggt 240
tgtagcgccc atctgcatta cggacgctac cacctcactg tcggctacgt tcattggcag 300
ccataggtct cgatgtagag tttgcgctct tgtttattct cggggattta gagtccgtcc 360
gatttggtcg atcatgcttg tatgttatat caattgtcgt attatctcga ttattaccga 420
caaaagtttg taaaactact tgtgctcatt atgtttgtga tggaaaag 468

```

(2) INFORMATION FOR SEQ ID NO:499

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 545 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...545

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:499

```

atgggcgtcg cccagtgtat gtacgaatcg cccgggtttc agccctgtgc atgagcgatc 60

```

```

atttgtagca ggagtgcata cgaagctatg ttgaacggat gccagaaaa gaatcggcac 120
tgcgctgata gagttgcagg ctacgccgcc gtcagcgaca tagaactgca tgaaacagtg 180
gcatggaggc agatgctatc ggcaagctgg cctacattcc acgagcatac gataatgcgc 240
cggcttccgg ttcttcgcgc agctggcgca gcacctctg catttggtct atatecctcc 300
ccgatagtcc ggccaactgc gccactggta gccatatata ggtccaaatc gccgttctca 360
tcagcccatt cgttccaaat gcgtacgcca tgtcctgcag gtaatgcacg ttcgtgtcac 420
ctctgaggaa ccaaagcagt tgtatataat ggacttcaag tgcaatcgct tggtcgtaag 480
caagggaaat cctcttcaag gtcaaagcac atctgatggc cgaatacgct gatcgtaccg 540
tacc 545

```

(2) INFORMATION FOR SEQ ID NO:500

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 480 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...480

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:500

```

ggcacgggtg gtgctgcgat ggaaggatgt gtgtgtgatg tgccgggtcg gccgtttcgc 60
tggacgacca tagcgagatt tgcgatatga gtcatgcccg gcctatgccg tgcattgtcag 120
tcgtatgata ctgaagaatg gcttgcgccg gacacgatgc taagcatgaa tgttccgaag 180
ggaaaacctt tggggcaaag ccttgcgccg ttacggacgg tcgttttgtc gacgaatata 240
tggctccgaa gatgcacggg gcaatgctgt gtattggatg acaggacgtc agataataaa 300
ggcaccatag agggtgattt ggaactgatg catgcgggct acgtacacta tctcccatca 360
aactgaatat gacttcgaga cgttatctac cttcttgag gaacttctca agaggagccg 420
tctgatctcc tctccccctt cctgattttc tttattgcgt atgcgctatt tcacgttagc
480

```

(2) INFORMATION FOR SEQ ID NO:501

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 437 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...437

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:501

```

ggccagaatc actaaccngt ccgttgacgg attgagatag actgctaccg agcttctgtc      60
gaaggtgttg ccattgaggt aagagccttg tacgtataat atagtogaat ataggagtag      120
ccacatctcc ttctgtaggag gaataagctc tttcagtcgc tttgogttga atccgtacat      180
attaggccag gtctgtccgg cattgacgga atgtcaatga catttgcgga gatggactta      240
tcgtttcgat gtctcgttg tacacctttg tgtcgggtacc gttaatagcc aaatttgtat      300
gcagatattg tctcatagg tgtattctc tcttttgagt actgccatgc ctttccttgc      360
tggacgacna agtactcggc cttcaccata tttctgcac gtcatagtcg tattccgttt      420
tgcccggtgt cttgaat                                     437

```

(2) INFORMATION FOR SEQ ID NO:502

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 617 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...617

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:502

```

gctcgggtacc cgcaaaacat tggcatgaga acgcccctgc ggacaaagac acactcatag      60
cgaaccgacc tgcgtagcca aaaccttcta cctgtccgtg cggaacttcg actcaagcac      120
agatattctc tctgcgaaga gtgccacatc cccatcacat ccatgtatcc ctattctctt      180
tgccgtagcc gatctatgct acacccgacc gatgatcttt cggccgatcc cgaatacggg      240
gaatactcgt cttttatata ccctccgaag caagaccatc ccatggcttg cgagccctcc      300
tttcatcttt tcttgaatct gcttgcgcat tcttcggcgc gacgaaggat cgttcccatt      360
agtccccgtt tctttctttt gaggctgtcg taggcagatc tcgtgctgtg tgctttcagc      420
atctgaagcg atcngtatg tccatactac acgcgacctc tcgcctcagg ctaagcaccc      480
atccttttgc acggaacggn gaagatccgc caaacaacaa cgaaccagaa atcatcaaat      540
gcgggtcgta aaaattcgaa aacacgtgcc aaaaaatttt cgtttacggc gtaaaaattt      600
ctttccggtt cgagaaa                                     617

```

(2) INFORMATION FOR SEQ ID NO:503

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 456 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...456

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:503

ttggatctac	cctctattcg	aaggggtacac	acaacataag	actatatcta	tataacccaaa	60
ttctgttgga	tctaccctct	attcgaaggg	tacacacact	caaggggtcgg	gttcttgacc	120
ttacctccag	ttggatctac	cctctatcga	aggggtacaca	caactataaa	ggtttggtca	180
aggaatgtgc	taccgtggat	ctaccctcta	ttcgaaggg	acacacaacg	atgcggacaa	240
cgtcctgtac	tccgtcttgt	tggatctacc	ctctattcga	aggggtacaca	caacgtcgat	300
tagctcgtcc	gccgacacgt	cttgttggat	ctaccctcta	ttcaagggta	cacacaacat	360
gattcttgat	tgggtggcttg	ggcgttggaa	attgcagtag	tgtgggggatt	cttcctcgtt	420
ggggcctttt	cgctaaattt	gaggcggacg	aggtgc			456

(2) INFORMATION FOR SEQ ID NO:504

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 712 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...712

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:504

ttttgaagaa	gtgccgacga	gcaaattggtt	ggtgagaaaa	agagactaag	aatcgtctgc	60
cttgatggat	agttctattc	gcatgtgggtt	atagcttaaa	tatatattaat	ggcctaaagt	120
tactctaaaa	gctgtaatta	atacgtat	tttatgctta	tttgcgagga	aatcggatat	180
atagcatcca	tcgttcgagg	aattttgcga	aaaccgcact	gaaaatagaa	aaggggacgag	240
ggcgggtata	aaatacgaac	cgaaaatgct	ccgattgtgg	tgcgtgtttt	ctgaaaaccg	300
gaacaagaag	tttttcggtt	tggcgcgaga	attttttatt	tctgaaccac	aacgaaaaaag	360
tttacgcgcc	acgtttttcg	ggggcgacga	caagagaagt	cggttcgtga	atgaaccggg	420
tataacgagg	tgtgccttat	cctttatgtg	aacctttaac	aagagatcaa	gacagccgta	480
gcaagtctgt	tttcaggtat	ttcatcttgt	gaatagagaa	gggataatat	cctctttcga	540
gtattgggta	agtgggcgat	tcgaggaggt	tcgatcataa	gctcctatat	tagagatact	600
tcggttttga	gataatgtta	gcgagacccg	aatagagcaa	tcataaataa	aagggtttatc	660
ccaagatgga	gattcctaca	tggaaacctct	ccgattgcga	tagaaaggga	gt	712

(2) INFORMATION FOR SEQ ID NO:505

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 450 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...450

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:505

cattatcggt	acttatccag	tcaataatca	tatattgagt	gggaatatct	ttattttggc	60
agatcggtg	gcctgaggaa	aaattttatt	cattaccttt	ttccaacca	cctgcatcg	120
ccgtcattcg	aaagttgaat	tacatccttg	tcagaaatcg	ttgttatttg	attgaaattc	180
ttttgttaag	catttgaaat	tagtcgttgg	gactttgtcc	aatgaagtgt	tttgatttaa	240
ctctgccggc	tgctcaatct	taatcgtcga	tatatatctt	ttccatant	ggaccattta	300
tgtcaacaga	agcacatagt	gagttctttt	gatataagta	naatgcatca	ttcttncttg	360
tctgctgggt	ttattcttca	acattatgtc	atgantgatn	attagttgag	gaacatncaa	420
ctcaataaat	tttagaacat	tagattcatg				450

(2) INFORMATION FOR SEQ ID NO:506

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 482 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...482

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:506

ggacaaaatc	atggagatta	tcatgagggg	acatgtgccc	gtagtggtac	gtcagccggg	60
agtccaaagg	tgtggacagc	caagttgaaa	gctgccggag	caaggtgata	catgtagtga	120
gcagtgccac	attcgctcgc	aaatcagggc	agccgggtga	gacgccatcg	tggccgaagg	180
gttcgaagcc	ggcggaataa	tggacgagag	gagactacga	ccctctgttt	gataacctgaa	240
gtagtgatgc	tgtgaacatt	cctgtgggtg	ctgccggagg	gattgcttcc	ggcctgcagt	300
tgccgctgct	ttggcttttg	gtgccgatgc	ccgtacaagt	gggaccggtt	ttgctctgag	360
tgaggaaaagt	tcggcgcatg	aagactttta	ggacattgcc	cgccgggtcg	tggaagggag	420
atacnatgct	ttcgctcaag	gttgatcgn	ctacgcgact	gctgaagaac	aaattctatc	480

ag

(2) INFORMATION FOR SEQ ID NO:507

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 497 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...497

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:507

```

atccggaatc tatcgaacag gccatgaagg ccaaggagct gatcgacaga ctacacccac      60
gccggccccga aagacttcta cagagaaaaa accgaataaa tcgaaatcga tcttcatgcc      120
ggcgaactac tcgaaacgac ggcagggtga agaatgggga tatattgcag taccaactgg      180
acaaattcca cgaagtatga aacaatacgc ctctgtgaag ggacaaaaga ttgttttcat      240
tcatgcaaag gtgaaggcat attgcggcag gcaatagaaa aagaactgcg caccgctaca      300
aacaacatcg ttttcaggat gcctccttcc gagaatatgg tttggtgcta cgatgggtgat      360
cattcattga aggatagtag cagttcctgc cgatggaaat agaaagaaaa ttcttggtct      420
taaatacaga tttcaaagcc aggctacggc ggtacacaac attatacaag cttatctcgt      480
ggctgatgaa gatgcac                                     497

```

(2) INFORMATION FOR SEQ ID NO:508

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 403 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...403

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:508

```

gccggtcttc cggcacgaga ggcagtcgcg tgatgctcgc catttcgata aagccgtctg      60
tccgtcagcg gatataccat aagaagcctc ggcatttca ttagtgggga gtgtgcacga      120

```

acggctatgc gctgcccata tgtggcacta tcagtacatc ctgcatcccc tctcccccat	180
cagctacggg cagtacatta cttctgcaat cggacaggct gcccgtagc cctcagcagc	240
tgctttcctg cctcgacaga ggagagacaa cccttgaagg agtctatggc tatccgatct	300
tcttcattcc gcatttagtt tacaacaaaa tccnggaagc actnaagcat tccaaacaaa	360
aatttcaaaa acccaagaag aaaaaaacga taacaaacta aac	403

(2) INFORMATION FOR SEQ ID NO:509

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 517 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...517

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:509

aattttttatc aatcgaatta aaagtgtgtc cacttatttg tattaaattg gccttaactc	60
taaaaacaat gaactaggcc aatcttttta cctcatttcc cataaatgga ggcaaagaga	120
gcttcttccc ttcgggatgt tcattgcttt tgatagaata atatatgtgt tagagatttc	180
caaggtctat gccacaatgt aattcgatca ttttatagat tgctcataaa aaaatattaa	240
gtgtaggaag ctgaaactta cagtaggc atctttattt ttccttttca gtggattaca	300
tcgaaaagag aggggatgct tcatataacg agaggacaga tataagaagt ttgataaact	360
gttttcggca gtcaagtcct ctcaaaaggc aaacttcgag ataggagctt cggaagaacg	420
ctacaatgaa tcacctattt tatccttttg cccgaagagc cctcttcgga acgaaagaaa	480
acccttcggt taccactatg aattgagcga ccccaag	517

(2) INFORMATION FOR SEQ ID NO:510

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 2313 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...2313

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:510

```

agcagagaaa aaatccgcat cgggccaatg agattcactt ctcatgccgc aggctgaagc      60
agtaggattg caggtagagg aagtggcacc tgcctcttca actatgtgat caaaacaagc      120
ggacagatcc tctccgcca aggcgataag ccaccatagc agctacggcc aacggcatcg      180
tttcgtttgc cggttcgcc ttacagaagg agcctccgta cgagcaggag agtgcatcgt      240
acgcactctg ccaaaaaatct gccggatgga gatcccgtaa ccaaggcaaa gatccttacg      300
aatcggctca aaaggaacac cggcgggctg aaaagctggt aaagatcaga tcatttcgaa      360
caaggaatac gaacagactt gcagggacta tcgacagcca agaccatata cgaagcccaa      420
gcatccggca ccggtgcggg agggtcagcg tggcgtctcc tatgagcgga tatatcaaaa      480
nccgcatggt aaccagggcg aatacgtatc cgtaggccaa cccatagcca ccgtgtcaca      540
aaccgcgggt tgacgctacg ggcgaggta tcggagagcc atttcaagat gtccgcaatg      600
tctccgggtg caacttccag acttcatacg acaacaactc tacgagctgt ccgatctgaa      660
cggaaggctg ctctcggttcg ggcgtgatcc acacagtcac cctacatccc cgttacattc      720
gaattcgaca atgtggcgat gtcgtaccog gctctttcgt cactgtgtat ctgctctcca      780
ataccaggaa gaagtctctt ccgttcccgt atcggccatt accgaagagc aggattgcac      840
ttcgtctatc tgcggttggc cgaagaggag tatcagaaac aaaggttacc ctcgggcaga      900
gcaacggacg tcgtgtgcga atcctgtccg gctgaaagcc ggagacaatg ttgtgactca      960
tgaggtatat caggtgaaac ggccgctact tcgtccgtaa tgctgaagg tcatactcac      1020
taaagagagg gatattcgat catgctgaac aagatcattc ggttctctct gaacaaccgc      1080
tgaccatatt ggtagcatcc gtactgctga tgctggctcg tctacgtcg tagtgatgac ggaggntacc      1200
ggaggtggac gtattccctg acttgaacgc ggaaccctcg taaccttccc cgtcgagacg gccgtcaatg      1260
ggtatggcac ccgaggaagt ggaaccctcg taaccttccc cgtcgagacg gccgtcaatg      1320
gagctaccga cgtggtcgcg tgcgctcgtc ttccactacg ggcttctcta tcgtttgggt      1380
ggattcgact gggggacgga tatttatcgt gctcgtcaga tcgtgtcgga aagctggcca      1440
tggtcgggtg cgatctgccg gacaatgtgg gcaaacctac gtcggccccc aatcctccat      1500
cctcggcgaa gtcattgatta tcggacttac gccgacagca cctctctcca agacctccgt      1560
actttggcog actggacgac cgtccgcgct tgctctcgat cggaggtgtg gcacaggtga      1620
cagtactcga ggcgacatca aggaatatca gatactgctc aatcccgaia ggatgaacac      1680
tacggatatc cgctggccga agtacgtgct gccgtcgacc aatgaccgc aatgcatcgg      1740
gtggcgctact gtatgaatac ggcaacgaat atatctttgc ggactcctct ccacgaacga      1800
tgctgccgca ttgggtaaga cactgtaaaa agtctcgatg atattcccat catgctcgaa      1860
agcgtggcag aggaaggggt ggcaataagg caccgaagtt gggccttgct tcgagcgag      1920
gaaatctgcc gtactcgtga ccataccaa acagccggcg acgagtacac tgagctgacc      1980
gaaaggttggt atcgtctctt ggccgatctg caaaaggctc cccctccgat gtgaaagtga      2040
gtacagacat attccgtcaa gagcgtttct cgaaaattct atcagcaacg tacgaaaagc      2100
tctgtacgaa ggaggcattt ccgtcgtcat cgtattatct attttcctga tgaatgctcg      2160
tgccacgata atttcgctgg tcaccattcc cctttcgtcg gttgcatcct ttttgaactc      2220
aaactgatgg gactgaccat caatacgtat agtctcggag gtatgctatc gccatcgggtc      2280
gctggtggac gatgccatcg ggacgtggag aatgatacaa acgcctgcgc gaaaccgtat      2313
gaagcctgcg aagaacagga cacgtgctca acg

```

(2) INFORMATION FOR SEQ ID NO:511

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 390 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature

(B) LOCATION 1...390

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:511

gaaattgaca gaaccgtagg ctctatgttc ctogaatcgg ggatgttctt aaagctgaaa	60
tccttagggg gctcgaggat gaaaagcccg tcttctgcag tatgttactt tctaatactt	120
tggtcggttag ctgctccagc tctgtcaggc gtaggggtgga tcggcaaaga ctaagtcata	180
gcgggtggcat actttgtgcn ttccagaaat aaaaatacat ccgtctcnaa gactctccag	240
cagtttcttn gtccagatgc ttaatgaggt tgcgantaaa ggctgcatgc tcacgcgttt	300
ttctatggaa gtgacggaag aacaaccccg agatactaata tccatgctat actccccgtg	360
ccgganaata ggtcgatagc cgaaagtctt	390

(2) INFORMATION FOR SEQ ID NO:512

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 483 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...483

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:512

gcacgtcggg cagcacctcc acgggagtat gcggtattgag cgtgacgcgg atttcatgcc	60
ggccttgcca atcgccgcca gtgagcgatg caggtgcgac tggcttcata gtggacgttc	120
atcatataaa cgcccagttc ggccaactgt ccacgaactt catcggctcc acgatcatca	180
ggtgaacatc gagcggttct tgcaaactcg tcggatagcc tcgagaatgg gaaaaccgaa	240
cgaaaattgg ggacgaatac gccatccatg acgtcgatat gcagccagtc ggcccgtgc	300
gattgatcat ttgcacatcg tcggccagat gcangaagtc ggngacagca aagannggag	360
atagcatagg ttgcataagt atagtatcgg gttatttttt attgattcga tgctcgcaaa	420
ggtatgcctt tcttgcgcca tccctgtaat tttcagacgg gctatcctat ggtttaccaa	480
aat	483

(2) INFORMATION FOR SEQ ID NO:513

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 581 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...581

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:513

cggcaagaaa	ggcctttcgg	cgggtgtgcag	atgttggtcg	tgggagatct	tatcagcttg	60
aacctgtggt	aacggcagat	gatgccgaca	tactgaaaga	ttttatccca	accccttctt	120
tttctcttcc	gaggcactgc	gagcaaccct	cccgctcacag	tggagctgac	caaggtgtat	180
cgacagacag	agcaagattc	gtgcagatac	tcgatcgaat	ccgatcgggc	aggcttaccg	240
aacagatctt	caggacatca	ataaatgtgt	caatcgccat	tacgagccgc	cgaagacgaa	300
ccggtcatca	cacttgccac	caaacgcggg	cacgtgagtt	acacaatgag	cggcaattgg	360
aacagctgca	gggcgacccc	gtcaccctgt	acgcactatc	gaaggcgatt	ttccctcctc	420
atccttgccg	acagaggagg	acttacactg	aagcaggatg	ctcaggtgat	attcgtctcc	480
aacgacaaa	tcgtcgatgg	gtcaatggaa	cactcggcat	agtagccggg	ttcgatcaga	540
gagtgaacg	atagatgtat	gtctcagcac	cggagaagtt	g		581

(2) INFORMATION FOR SEQ ID NO:514

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 525 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...525

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:514

ggacaaggtg	gtggagaatc	tgagcatctt	cgttgctgca	gctcgttttg	cggcgaggcc	60
ttggatcata	cgctgctgca	tggccctccg	gggctgggaa	gaccacgttg	tcgaatatca	120
tagccaatga	gcttggcgtg	gggcttagat	cacttcgggt	cccgctcctg	acaagccggg	180
tgatttgccc	ggactctcac	ttcgttggaa	tccaacgatg	tacttttcat	agacgaaata	240
caccgctgag	ccctgtagtg	gaagaatata	tctactcggc	catggaggac	tacctataga	300
tataatgctg	gacaagggac	ccagcgcgcg	ctccattcag	atcatctctc	ccccttcacc	360
cttggtgggag	ctactactcg	cagcgggttg	ctacggcacc	cctttgcgcc	cgtttcggga	420
tcaatcttca	tctggagtat	tcgatgtgca	tactattacc	ggtatngtgg	agcggantgc	480
acgcattctg	aggtgtcctg	ttcgcacgat	gctgccgtag	agata		525

(2) INFORMATION FOR SEQ ID NO:515

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 564 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...564
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:515

```

atcgccggcg tccgggatag tgccttgccg gacaatatga cctgcctcac tccgaaagtt      60
tggccccgaa gatggggggc gatgtcctgg gcaaacgggtg cgaccggcag aaagcaaadc      120
ggaccgagcc atcacgatcg gaggtgtttc gaggatctgc cccacaacag cagcatccaa      180
gccgatatgc tcccgccatt acgtggatgc cggccgagag cctgaacaac tggatcggca      240
acgacgctac atagcctacg tccgtctgcg tcccgggtgtg tcgcccgaga gcctgacgaa      300
gctctcctgg agatgcaaaa gcggcatcag gatatggaag tctccgcaaa gcaggagtgg      360
aattgcacta ttcccttacg cccttcaacc gctgcgtctg gaagatccca ctttgggtcaa      420
tatgctgcga atccagcaga tgtggccata gcgggtgctgc ttatttcgct gctgaactac      480
gtactcatga cctcgccctc atggtcaacc gccggcgtgt agctgccatt cgcaagtgtg      540
ctggagccat gcccggtgcag atac                                     564

```

(2) INFORMATION FOR SEQ ID NO:516

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 1405 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...1405
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:516

```

agggtatatg tataaatagg catgtgctta ntgctctcct ttcgggtatt tgatgccacg      60
attgaatcct tcggccagag agatcagcgt ttctgtagga cgataccggg gatttcttgg      120
atgggtogaat tcaagatgtc catcaggggt cattgtcgat ggcgaagagc ttgatcagca      180
aagagtaggg tccgtgtgat agtgacactc cacgatctcg ggaatgttgt acagatgggg      240
gagtaatcct tgtacatcga ggctttctcc agacgaacgc ctacgtaagt acatttctga      300
aaccctaaaga cttcgggttg atacgatagc ccgaacctgt aatactccca ttctgatcat      360
tctttgtacg cgctggtgaa cggcagcacg cgtacgccgc attcttctgc aacatctttg      420
aacggcatatc gggcattatt gagataatgc tcaggattcg cctgtcgagt ttgtctaacc      480
tttccatata tataatggct aaaaactgaa acaaatgtat gaaaaaactt atgtcggggt      540
attttcgatt accttgagac tttatactat aaagcccaa gggttttagt ataaacgcag      600
gagactttat agtataaagc cataggggtt ttaagtaaaa gtatggaggg tttatagtat      660
aaagtcgctg gacttttaag tataatccaa ggaacatcgt gttctgctta taaacgatag      720

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gttcgaatta ttgcaaacia gcatgcaact caatgggata aagggaaatg ccatatattt 780
gcaggcttaa aatccagcaa attataatcg gttttttata tggaaacaac ccactctctc 840
cgctccgaaa aagcatcgta ggcgtacagt tcctctttgt tgtttcggag ctactgtttt 900
agtgcacctc cttgtgggtt tagacccttc gcagccctgt ttacggccgg catcgggtaca 960
ttgatttttc atttggtgac aaaggaaagg tgcctatttt tcttggtagt agttttgcct 1020
ttatcgctct attatcaagg ctacggagat gtatgggctg cccgggtgctc tttcgggttg 1080
gtcgggtgtg cattgggtta ttatctgatg agtgcttttg tcaagtgcag ggagtacgtg 1140
tgatccaacg tttgttcccg cctgtagtca tcggcctgtc attatcctga tcggactttc 1200
gcttgccgga gccggagtgg atatgcacaa tccaactgga tactggctac tataatcgctt 1260
gctaccgccg tgctgtaact atgctggcca aggggctttt caagctgatt cccatcttct 1320
gcgtatagtg gtaggctatg tgaatagccc gtggtttcta tganggcgat ctaatcctgt 1380
cgtgaaggct tgcgtgggtg agcct 1405

```

(2) INFORMATION FOR SEQ ID NO:517

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 548 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...548

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:517

```

atacccaaaa ancgactcgc tcaacattcc acggccacag angaacacct gcggatggcc 60
aagccgaaaag tatccgtaca gcgccgtccg aaaggcgagc agcagcctct gctcctctta 120
tgaatatatc catcaagaat agtagcacat agcatcgggt actccgggcg ataccatcag 180
tatcatagca tcccaacggt ggctctcgtg gatacggcag gcgtttccgt agcacggcaa 240
gcggaagctt gtggcgcgat gtcccgttca agctccgtcc cgattcgtc aatcgctgaa 300
gttcttcgtc gatgccggct ggcagatggg gcagagctac cgctacggat cgactcggcc 360
gtctggcgaa gcgtgtacga ccggtggaac gcccgtgga gcaggtggtt tcgttccttc 420
cggaggagga tctcagcagc cgttactgaa gttgtcggga gaggtgaca gtactgccgt 480
agtggaaactg tgaataaggg tggagagccc gtagcgacaa agaaagcaga acggggagag 540
tcctcttc 548

```

(2) INFORMATION FOR SEQ ID NO:518

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 499 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...499

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:518

```

gctcgaatgt tcttgaatac ttgttcgggc tgctctgtta ctccgccggt acaaagttcc      60
ctgtggtagg atcaaggcct aattgtccgg aagcatagga atattaccca tcaggatagc      120
ctggctgtat ggtccgattg cggccgggca ttcttcgtgt tgattacctt ttccattacg      180
tactgttttt tatttgatta ttaatttgat gattgcagtc tttgctgtcg cactacttcg      240
taaatacaat gccggccgca acggagacgt tcaatgagcc tatagccccc atctcggaat      300
agctactatg ccacgcggca tcctaagcgt atcaggtgat ggccgacatc ctccgcccc      360
atgactatac ccaaaggcag ctccatgggt actcggtata tagatctgca agccttcttn      420
cgaagcaagc gactatgcct aaccgnattc ttgcaagctt gcagatggct tccggaatgg      480
aagtcacgcg caaacccga

```

(2) INFORMATION FOR SEQ ID NO:519

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1513 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1513

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:519

```

ggccctccgc cggatttggt ctgtccgget ttctttctct gttcgcgttt ttgcctcgtg      60
ccttacgttc tcgtcgcgt tgacgaagtt tctccttcgc tcacgttctt tttctttaag      120
cttctgctcg cgttcctttt gcttgagcgt tgatccttaa gcttgctcgc acgggctttt      180
tctcgttctt ttccctgct ttcaattctc gtttgcatc gcgtccttt tctcgtttgg      240
cctttcgagt gctttctttt cgtccttctc attttggtga cgtcctttgg ccagcgtga      300
atctgctcta ccgagacgtc ttgacctct tgctgcttga gcgtggcaaa gcagctgcat      360
ctgagatcgt atcggctgcg gaagaatcgg ctccacagga ttggctccgg agagatctgc      420
tccctatcga tgtcgaaagt ataggagtag ccgtcataat gctgtccttt ggccgggtta      480
gatgganaca gaggtttcct gtctgtgccg gacgtactat cgcgagcggg atcctcggct      540
cgttcttgtc ggacacgata ggagccggag tgccagcagg ctctatgtct catcctcttt      600
gccgacagct tgctcctcgc cgttcctctg ctgccaggat cgaggacgaa ggccgtctcg      660
ggcacttctt cttttgcgag gaaggatgtg attgacctat gcttttacc ttgacaagca      720
gctggtaatt gctctcgata tggggaacaa caggctgctt tcgcccacgc cactcataaa      780
tccgtcggag cgaaagcatc cttgatatac tgccagccca tgcgtggggg cggagagagg      840
tcacagcca ctgatcgaat gctccacagg tgctctgcac tattccagt tttgctctgt      900
atagcgagag aagttgaatg aagcaagagc aaaagtaccc tgtttttatt caatgtaccg      960
gcaggagcaa gaaggatcag cgggtacgct cgaaagattt gggttttaca aaaggaggca      1020
aagagtccgc gatatgctgt cggtatccga actgccccac cgaatatccc agtcgatacc      1080

```

```

gtatagccgc cctgtacgat ggaacggccg cggagcaact cggtaagatc gaggaggcca 1140
attcggtgac gtctgcttcc ggataatcct tcaccactgc ttcagggcag agtgaagccc 1200
ttggagtctg actccagcac ataacgagtg cattgaggaa gtcgaatttc ggcgccagtt 1260
ccgatagggg gaatgctcgc ggcattcatt tctgctcttt ctgaccgaac cgactactcc 1320
tttaggtagg agtcgaacgc ttgcccgtag agttcggttct ggcgacgac catgcggcca 1380
attccttcag ataatcgga ttgctcangg cctttgccag atgtcttcgg gatagtactg 1440
taggatcaag gcgcggcaac gntcccgcct cggcttggtg ttcattcngg tgtagagcat 1500
aaagagacga tag 1513

```

(2) INFORMATION FOR SEQ ID NO:520

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 544 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...544

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:520

```

gagtattaaa atttctcgag agagccattt ttctagattc caatataatc cttatatcta 60
ttataactaga ttgggtagta cgatgaacca attggatccc aaaaaagaat gaggcaaaca 120
gaagatttcc tccgtatcga aaagtctgga aggaatggtt caacctagat tctccagagc 180
ctaatagcta tgatatctca tgctaagaac agggaccaat atgctccatc gtaacctgct 240
gaacttgtaa gaaactcaaa cttctcgata tctaccaagc tcaagctgta tgctagtaca 300
gaaaaaaggg tgtattttcc tggttttata acggatatag aaggatccct atgtagggtg 360
cacttctgtg agagtctttt ggaatacaat agaccgttct tatactttat tttctttggt 420
ctccattgtg gaagagatct gaagaagatt aagaaaatag gcaattaaga atgtaaacct 480
tatngagagt gtctatgcag cagatattat taggggggag tggangtata tccctttact 540
cagc 544

```

(2) INFORMATION FOR SEQ ID NO:521

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 475 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...475

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:521

```

agagagaacg gaatcgaatc gaccaaagtg ttctggccga gcgagaacga cagcctcaag      60
ctctggaatt gcttcacaat cgtgagatcg agcttggtgc aatatcaaca agaattcttac      120
cgaggagaaa ctgaccaatg gttataactc cgccgtgcag ccacgcacct gaatatcccg      180
ctggttacaa atgctctttg gcttctgcct tcatcacggc attctgcaaa catagccctg      240
aggatttcgc atcaagagtt gggctgaata caagtagtgc ctttttcttg ttgaagtgtc      300
gattgtaaat tcgagagagc ctctgtaaat ccggtcataa ggcgactgca cttgcagcat      360
tctcttctct ctctcctcac ttccatggag ggaaaaagac ggaggcagtg tntttagtat      420
ttggacactg cctctgtctt ttcgagcgga ttacctnca aaagatcaat cccgt          475

```

(2) INFORMATION FOR SEQ ID NO:522

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 463 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...463

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:522

```

tgatcctccc taccgtggag ccgttcggaa agacccttgc cgatgcgttg gcgatcctgt      60
attggcgaaa aagtactgct tccaagagct atacgataaa cggcagtggc tgcacagcaa      120
gtggcagaga agaacaaatt tatcttcgag gccaatacaa agcttctccg ggcggagaca      180
tttctttggg agctataacg taacaccggg atccgtcgta gtgacggccg gcggtgtcaa      240
gctgaggaga atgtcgatta tacggtagac tacctctccg gcaacgtatc gatctcaatg      300
aagcgattct ctcttcggga actcccatca atgtgtcgct cgaaaccgag ggctgatgaa      360
tatgcagcgc aaaacgatgt tcggtataga tcgaactaca acttttccaa agacttcacc      420
ctcggcggna cttcatgca ctgagcgaaa tgccgtgac gac          463

```

(2) INFORMATION FOR SEQ ID NO:523

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 645 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...645

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:523

```

gcctcggatt tactcccgac gaggaaatcg gtcggggagt ggatcacttg atgtcgagcg      60
gttcggtgcc aagttcgctt acacgatgga cggcagtagg aaggagagtt ggagtatgag      120
aacttcaatg cggttcggcg caaactgccg taaacggacg caatatccac cccggctatg      180
ccaagggaaa gatggttaatt cgctgcaggt agtgtgccaa tctggcatgg ctcttctgcc      240
cgaggtagtc ggccggaggc tactgccggc tacgaaggat tttccacct tatcgcatca      300
acggttcggt agagaaagca tcggcatctt atatcatccg cgacacgacc gcaaactctt      360
tgaagagaag aaagagctga tcaaagctgc cgagactaca tcaaccgcaa gtacggctcg      420
gacatcgtgt cgctcgaact caagatcagt attacaatat gcgagagatg gtagagcctc      480
atcccgagat atcgaaaaag ccattgctgc catgaagctt gccggcataa cggccanggg      540
cagcctattc gcggcggtag ggacggggcc agactctctt atatgggatc ccgtgcccga      600
atatatttgc cggtgggatg aacttcacg gcaggttgaa tactg                          645

```

(2) INFORMATION FOR SEQ ID NO:524

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 505 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...505

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:524

```

gtgcctgggt gttggatcat gagaagtctg tctgggggtgc ttttataccta tgacagtgggt      60
gatgctcttt ggattcttga aaatggagac ggcattcgca ttgaaagaac aatggggcga      120
cggatagaat acgtcagcaa tatccttcog tgagcgaaag cgaattgggc tctctttatt      180
cctatgatat tatgatgatt tgggagagga gggaaaggcc aagacccccg aagcaactcg      240
tgctccgaca gcatcgctcg ccatgcagag gcatattccc ttaccaagcg tacccttcga      300
tattgaatat cctcaaggat ctgaaccaga ccttgcaoga tgggatcagg catactatag      360
cattcccggc gatcgggagg aaagtggcac cacagctoct cctatatgag aatgcngggg      420
gggagtgaag cccgaaagct gatagactta cgaataccag accggttgct accctgaaaag      480
ttgggaaaat accctcttta ccaat                          505

```

(2) INFORMATION FOR SEQ ID NO:525

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 519 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...519

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:525

```

ggggaactcc ttgtagcaga catcacctac gtggcttacc aagatggggt gcctatctct      60
ccctactgac cgtgcctat agtcgctgta tcgtagggat tgcttacatc ctaccctaga      120
ggttgaaggc tgtttgaatg ctctacacaa gccttttgctt tctacgatca gcatcaaatt      180
gatacgagca atatgatcat catagcgacc gaggcattca gtatgccggt aagagctaca      240
ccgattgttg catgggagag gctggcgcat cagcatgact cagacgggag atccctgcat      300
aatgcattgg ctgagcggat gaacaatacg ctcaagaact cgtgcacatc tcctcttoga      360
agcagctctt tgatcaagca ctctttctg taaacaagcc gtgcgcatgt acaacgaggc      420
gcgtccacat caagctctag ggcgaaaacg cctatgcaag tcattacacc ggagtctgaa      480
aatccggtac aacgaggagg gagcatgggc ccagagatt                               519

```

(2) INFORMATION FOR SEQ ID NO:526

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 839 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...839

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:526

```

ggcgcgcttc cagtatttcc tccgtagtga ttatcggacg aatctctgcg accggccacc      60
gatattctga cgaatgatct gcatctcttc cttcttttgg gatagtctat cagcaccttc      120
atcatgaatc ggtctacctg tgctctgca actgataagt accctcttgc tcgataggat      180
tctgggtagc cattacagga aaggctcagg gagcttgaaa gtcgtttccc caatggtaac      240
ctgtcctcct gcatcgcttc gagcagagca ctctgcactt tggcaggagc acggtgatct      300
catcagccaa aataaagttt gcgaaaatag ggccttgctt tactgaaatt cctcccgttt      360
ctggctgtac atcatggtac ctaccacgtc agtggcaaga ggtccggtgt aaattgtatg      420
cggttgtact tggcactaat cgtccggcca gagttttgat agccaaagtc ttggctaata      480
ccggtactcc tcgagcagga tatgtccatc ggccaacagt ccgatcagaa gcgactccac      540
aaatggttct gtccgacgat attctgcgcc ataccgtgcg tgatgagatc acaaatgagc      600

```

ttttctgctc	aataagctct	gtgagagcct	tgatgtcatg	ggttcactca	tttttttcta	660
tatcttttct	tgctaaatac	taatgagatt	atgcacacca	tctcatgttg	agatagacat	720
atagcatcct	gcaggtttaa	gcgcgaagtt	caaccaacgg	ccagcattcg	ctcgatcgag	780
agcaagcctt	ctccctgatt	tcagcaggca	cctttacttc	ataacggntg	tggggagag	839

(2) INFORMATION FOR SEQ ID NO:527

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 473 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...473

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:527

gatttggcca	aggcttatgg	cgatcaccag	gtgttttccg	gagctacatc	accatcgaaa	60
gaggcgaaaa	ggtggctttc	gtaggcaaaa	acggtgccgc	aaaagtacca	tgggtcaagtg	120
tatcatggga	gagctgacag	actacacggc	aagctcgaaac	tggggcacaa	cgtgcagctg	180
ggctactttg	cccaaacgaa	gcccaagagc	taagagggga	tctcacggta	ttcgacacga	240
tagacgtgag	gccgtgggcg	acatccgtct	gcgcctgaac	gatttgctcg	gggctttctc	300
ttcggggggcg	aagcatcgga	aaagaaagta	agtggtcctg	agtgaggaga	acgagcacga	360
ttggctatta	tcaggctttt	gctacagccg	gcaacttcoct	tattctcgat	gagccgacca	420
atcacctcga	tatgcgctcg	aaggatgtac	ttgaaaagag	gcgatcaaga	act	473

(2) INFORMATION FOR SEQ ID NO:528

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 337 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...337

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:528

```

gggcaacttc ggttcggtgg atggcgattc gccgtgtgcc atgcgttata cgagtcgcgc      60
ctcagcagga ttgccggtga gatgcttcag gacatagaaa ggaaacggta gacttccaga      120
acaatttcga tgatacacgt caggagctac gggtctgccg acacgcattc cgaacctcct      180
cataaacggg gcttcggtat tgcgtgcggt atggctacca atatgcctcc ccacaatttg      240
tccgagctat tgacggatgt gtggcgtaga tcgaagcaga tggcgacata nacgggaggg      300
cttgatgcag tatgtctagg ctccgattt ccccaca                                337

```

(2) INFORMATION FOR SEQ ID NO:529

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 450 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...450

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:529

```

tggtgcgtta gaaaatggaa agtgcagata tggacggcct gactagggga tagctttttg      60
tctatgtagt ataagataat tcctctgtat tctgcgaatt atgaccttg tcttttgcct      120
cgtatcttgc tttcagcctt ttcaataccc ttggctatag tcttcttttt tgatgatttc      180
tagcaaacct tctagacaag ttccgattc tccttgagag aaaggcaatt caaattaagc      240
gtgattttat atcatcattc caagacttat ttgcactaga tattgttccg tcatcttgta      300
gctgatgcta agaaacagtg cgtcggtaaa gagattaagt gtatctcctc atccttcttg      360
gagcaatcgc aatgagcgga gccctgaact tgccactgca acatgcaacc atattgctat      420
aggatagttg ctgggcaggg ttttggtac                                     450

```

(2) INFORMATION FOR SEQ ID NO:530

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 838 basepairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...838

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:530

```

gcaaaaataag attcagcctc ttgcaggctc ttgtcgtctg cttattgtta cctctttttc 60
tctccaagct caagaggaag gtatttgga taccctctgg ctatccacaa gacggaaaaa 120
gccgtagaaa cgcccaagaa agtccttccg tagccaacgg agtactttac tcggtgggca 180
aagaagctcc ccatgagcaa agatcttcga ccgtatcagc ggactcagcg atacatcggt 240
aagcacatag cctactccga gcaactaaaa tccttggtca tatactatgc atcagcaata 300
tcgacatctt ggacgaagca ggccgtgtga ccaacgtacc tgcttgaaaag acaatatcga 360
tctgatagac aaaacgctca atcgcccttt gacgtaggca acagggctta tttggcagga 420
ggattcggcc tctccgttct gatgtcgccg aagctcgcat accggctacc tacgccaagg 480
gaactaagggt accgatgtgg ctaagttgga caatgatcgc ttgctgatgc tgaaagaagg 540
cagctcttca tcggaaaaga gaccgataac ctgcaagatc cggccgcagg acagccttgt 600
ctttgaattt gccgatgggc tcggtcaccg gtctgggatt gtcggggaag acatctgttt 660
cctgctcgcc gatggcctg tatatgcgct gcaaaccaat cgtttgagcc ggagctattg 720
ctctcttcc cgcgcattca cgactgtatg tgacggatcg tggctctgtt atctgtgccg 780
agaacgaatt tatttcatag aaaaaggctc caaacgaca caatttccta tagcgacg 838

```

(2) INFORMATION FOR SEQ ID NO:531

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 405 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...405

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:531

```

gccgatagtc ccgagaagga aagnngacaa cggcaatact cataatggca aaaaccttga 60
atggaaaaag gcagaagacc gcttcttggt cttttgtgca ttcttattgc tatatctcan 120
anaaagaatg ggagactgac accctctccg gccggcggtg gttttgatca tcgacggatc 180
cgtttcaggg gatcggggcc tgtcattggt tcccaaaagg ccaaaacacc ccaattttctc 240
cgcaaaatag tatataatat ggtatgcgac tatattttct cgagcgagaa aaatctgtaa 300
ggatcaatccc taagggtagt atatattaaa aacggagtaa ggggctatgc cgaanaaggc 360
cggcaaaact ctccggatgg tttccttttt atttgtctcc atttg 405

```

(2) INFORMATION FOR SEQ ID NO:532

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 542 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...542

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:532

ttcggctctc tccgcgatga ggtgagaagt ctttttccca attataagct atttcgatcg	60
gttatatccg tgaaccaagc cgaatggccg aactgtacgt gctgccgacg tctttgtaat	120
tccctcttta gaggagaacc tccctaaact attatggagg ctctctctgt cggtacgccc	180
tgtgtggctt tccgtgcggg ggtataccgg agatgatcgt atcgggtagt nccggatatt	240
tagccctttt cgtgatccgt ccgatttggc agaagggata accaagacca ttgcctacaa	300
gaaacctccc ccgaagctgt tgcttcagct tgctcgtcct ttgtctcagg cactactcgc	360
gtgaagtagt atcctctcgt atgctgcagc tcaccgcgaa ctgctctgac ttgtacgaag	420
aaggaatagg aaaacatcca aacgcaagag tcttttcggc aacttttcag cagataaata	480
tgcagccatc ttttggcacc aaaacaatac ctttgtatca taatcattat taagaacgac	540
tc	542

(2) INFORMATION FOR SEQ ID NO:533

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1336 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1336

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:533

ggccatgccc cactgccacg cgtgcacggg ggacttcacg ttgtactatc cggcgatctc	60
ttotatatatta tctattcggg tgtggacgat aaagaccttc cgttgcgggg catctcgaaa	120
ttgacagctt cccgaacaat gtcgggggtga atcgtgccag ttcgggtggc acgggatagc	180
gattcggcgg tggggtttga tattcgagag gtcgcgtgct cccatcagag agaattgcaa	240
agtacgggga taggtgtagc agacatggtc agcgtatoga cattgacctg tagttgcgca	300
gcttttcttt tactgccaca ccgaatttct gttcttcacg gatacaagga ggccgaggtc	360
atggaatctg atatcgttgc tcacgagcct gtcgtacctt taattatata gatccgacct	420
tctgccagat cgtgcagaat cctttaatat ccttggccga acgggcgcgg gatatgtatt	480
cgatacgcac gggaaatttt gcaatctgtc cctgaacgtc tgatagtgtc gataggccat	540
acggtagtcg gcaccagtat cgctacctgt ttgccgtctg tggcggcttg aatgcggcac	600
gaacagccac ttccgtcttg ccgaaaccga catcgcccag ataagccgat ccacggaag	660
atcgctttcc atatcgctt ttaccttgcc gtggcacgct cctgatcggg cgtatcttcg	720
tacaggaaag aggtcccaat tcgtggtgta ggtagctgtc cggactgaat gcaaagcctc	780
gctctctttc ctttgggcat agagccggat cagatccgca gcaatctcct tgaacgcttt	840
ttggtcctct ctttgagctt ttgccaggct cccgtcccga gagactcagt tctacctgcg	900
catcactgtc accacctttg tatttggaca attatggagg ctgtgcagat tgacgaatat	960

tatatcggtta	tttcggtaaa	gagtttgatt	acttcctgcc	gettccctcc	cacatcggtc	1020
gtgataaggc	tccgaaccgg	ccgataccgt	gatcgatatg	cacgatatag	tcgccttgga	1080
gaattgggtc	agctccttca	gtgagagggt	cactttcccc	gaacggggtt	gtcgcttttg	1140
agattgtatt	tgtggtaacg	atcgaaaagc	tggtgaccgt	aagcagaccg	atccgaagag	1200
cttcgtccga	aaaaccctca	tgtaagtga	cgatactctt	ttcggaagga	gcgaagagct	1260
tccacgctcg	gaaagatctc	ttccactctc	tcgtattgct	tatccgaggc	tgtggccaaa	1320
agcttctgta	gccggc					1336

(2) INFORMATION FOR SEQ ID NO:534

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 551 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...551

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:534

cggttttttcc	agtcgcgtagc	tcgcaaaacg	aaatccaaat	tctccgcaaa	gtacgtccgt	60
tcagcaactg	gaaatcctga	aacacaatgc	ccaaattctg	cgcagatagg	gcaactgctt	120
ccgtttcaac	tttgccagat	cataatcatc	acgcgggcat	aaccggcaga	gataggcacc	180
tcagcataca	aagcctcagc	aaagtgtctt	tccccgatcc	cactgagcct	atcagataga	240
cgaagctccg	gcggaaaggg	tcagattcaa	attttgaaaa	atgacgtttt	cctctgacag	300
agcgctcacat	ctctcatctc	cactacaaga	gctttatcgg	ccaacttaca	atatccattc	360
gttttttcag	aggctatttc	cgaacaaagt	taaaataaac	cgtggaggat	agtcctaccg	420
agtggctcag	atcggtttac	atttcccaaa	tcataaaatc	cttctttgat	cagaagtctt	480
tgaagacatt	tttggccatg	agacattaca	tattgggcaa	aaaaaaagaa	ttggtctacg	540
gcaggaccac	c					551

(2) INFORMATION FOR SEQ ID NO:535

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 664 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...664

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:535

```
gcgtcaggat cacggcttcc acttcgtcgc ctacatgcag gaagtcctgg cagaacgcaa      60
gtgctgtgtc catgacattt cgcttacgtg gataagacct caacgccctg tgcaatctca      120
acgaaagcac cgtaatctgc catcacccaa ctttaccctt caccttatcg cctaccttaa      180
gctcgtgtgc gagagctccc aaggatgagg catcagctgt ttgagggtccg aagagcgata      240
cgcttcgata ttcataaaag tcgaggataa cgacattgat cttctgatcc agcttacgat      300
ttcttcggga tgagccacac gaccccatga aaggtcagtg ataggataag accatccact      360
ccaccgaggt cgataaatac tccgtaagaa gtatatctt gacgatacct tcgagtaoct      420
gccctttttc gagcttgccg agattttctt cttctgttgt tcgagctctg cttcgatgag      480
caccttgttg aaacaactac attcttatac tcttgattga ttttcacaat cttgaactca      540
tcggcttctc aacgaatgca tcgtagtcgc gaatggggcg cacgtcgact gtgatcccg      600
gaggaaagcc tcgataccga atacatcgac gatcatacac ccttggtacg acacttcaca      660
tagc
```

(2) INFORMATION FOR SEQ ID NO:536

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 931 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...931

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:536

```
ccaagcaaaa ccggaatctg tgggaatggc acttgaccan ccggtcgggt cgacttcgtc      60
cgtcaggcat cgaaggcatg agggcaatct ttagaccgtg gtatcagcca gacattggag      120
cggacgcata acagcattgt gctccatgga ctgaccagca cgctacagcc tgccctgcaa      180
gagcctcgaa gaatggattg atacctgtag tggcattatc cgcaaaacag atatgagccg      240
actcgataca ccgatcagggt cggccaaagc atcgcgcaac tcttctactt ccgagtaacg      300
cgcagcgtct ctctatcgcg gctgcggccg taactcccta ccgcacatcg tagaaatacg      360
ccaaagcctg acgcatggca tcgggttttag gaaagaggag gtggcggtat cgaaatatgt      420
attcatccgc aatgcggcaa ccatcaagag caaatgggag gtattcctcg ctacgggaga      480
cattatactg cggttctgac aaatcgttcg aatccaaaca gctgtcaaag ataactacat      540
tgctgatgtt ctctgaccac tattccacag tcacgccgat ttctgcacg tgattacggc      600
tttatctccc gatgcggcag ttgcatccaa gcggatgagc gcgtccggac gatttgattc      660
atatctacag tttgaggcag aggattttga tcacattggc aaactctccc atagtcggga      720
tctctcgcca ctgtcgccat cttcactcac agccagccga tagcggacgg cagtcgtagg      780
cttgcttcgg ccttatatgg cgcataagta aaagcgcgca acatgacctc tctcccagat      840
cgatagtcaa tggatccgtc cgaaagcagc cttcagtcgt cagtggaata tcgttccacg      900
actcatcggc aacgacctgc tccggtggt c
```

(2) INFORMATION FOR SEQ ID NO:537

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 570 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...570

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:537

ccgtgcaaag	cttgagcact	cgggtgatac	cggttcgctg	gtagacagcg	gcaaacgact	60
tcctctatac	atctgaaacg	aaagtccagc	agctgccacc	aaccgatacg	ggtgcccgtg	120
catctactcc	ggaaataaac	tgogttttatc	ggcaggcaat	ccggtcgtct	ccgtatcgat	180
aacgagaaaa	caaggcggct	atccacagcg	gcaggcacag	gcaccaacaa	agacgaggca	240
tcggctcgat	aatccccctg	cgacgggaatt	gacccgaaga	gccttctggc	ggcagttgtc	300
ggcctgccat	ggatctttcg	gtttccataa	cgtcataaaa	gcctgcctgc	aatcagcaca	360
agcaggggcca	cagccatcca	cagcgtcatc	gataatcttt	tttctcttat	cgaagagaaa	420
ctttcggtcg	cgtgcgatgg	ctccttgacc	gatccggctg	gcacaaattg	ccaatcgag	480
acagaaggca	ttctacccta	cccgtgcggc	gcacatagcg	aatcagagct	tgccgaatac	540
cacggctgta	gagttcttga	gacgagaatg				570

(2) INFORMATION FOR SEQ ID NO:538

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 432 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...432

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:538

gggaaatgaa	tcgcttgggg	gttatgggtg	atatatcgca	tgccggctgtt	ccactgttctg	60
tgatgtcttg	caaatacagta	gtgcccctgt	tgtagccatc	attcatcgtc	ccgcgctctg	120
tgtaatcata	cacgaaatct	gaccgacaag	acgcccttgc	catagcccgt	agtgggggag	180
tggtgcaggt	ttgtcttatg	ccggatttat	ttccgagcag	gaggaagagg	gctccgtaca	240
gcatgggcag	accatatoga	ccactttgtc	aggttgttgg	gcacggaaca	tgtagtgctg	300
gttccgattt	tgatggagat	ggcgaactgg	taggttgccg	agggccaatg	acctgatcaa	360

tttgactgtg gagctttctac gtctgtggcta tatcgggata agctcggaat tgctttgggg 420
cgagaatttc ct 432

(2) INFORMATION FOR SEQ ID NO:539

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1497 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1497

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:539

```

ggccgaatct tttgccgat acgaatgctt gggttttcat cggtgccatg gaatctgtat 60
aagnagcatc gcgccttatg tggcggacaa acatcatgtc cggccgtagt gaacgtagac 120
agtacaggca ggtacgtggt ttccgtttga gcggtcatat ggggtggagct aacgatctga 180
cgcggttga tcgccttgcc atcgggtggcg aaccgggtgt taccacccaa agcgaccgaa 240
caggatctgg gcattggata cgctggcttc gacctatgga tggaaagccg tttcaataca 300
ggcgacatga atcgctccat ttgcgtcttc gtggggggag cactacggca ttggtattgg 360
agacttcggg gcgaggagaa gattttttgg aaggtcttgt ccgcctcatg tccgcctttt 420
ctactcattc gatgctgtcg acaggcggag ttcgacctca ttttggttgt ttctgcccg 480
cacttgagga cgggttgccg atgatctgct actatcctcc tgctcttacg atcggagtag 540
ttgtcgcagg ctatgtgccc ccgaaggatg tgcggaacac atcttctcga aatacggcag 600
tcaggttatg ccccggaagc catcggtcgg atagccagat cgacatcaaa gccgaagagc 660
cgcttggtgc cgatctcgta catogttcgg agggataccg ctacatatat atacgggaca 720
agacttacag cgggtgaagt agccaacccc tcggaaaagg tatttgccgt tacgggttgc 780
tacgagtagc cgaagcctcg gcacggaaag tagcgatat gggaagtctt gtgtagagaa 840
gcagaaaggg cagctatcgg agggtaacga ttttaccttt gcgtggcaca gacagccgac 900
tccacccgta ccggccatat cgaaatagtg gagcggttcc aggcgatccc gatctggtat 960
cgggtgcgtg cagacagttc tggaaaaggg cgatctgatt ctctatgccg gcagccttgt 1020
ccctcgcgac tgaccgcttg tgccaaagcc ggtgccacgg tcagaagtgc ggctgcgaga 1080
atctgcaaga acagttcgag atcatgtcgg actttttacc cagaggcaat tagtggtacg 1140
cctgcatacg ggcgatccct gcactacagg tgctatcaag agcaaaggc actcttcgac 1200
cactacggca tgcgctatca tatcagccgg gtatctctcc gtttcaagct gcagccgcag 1260
ctctgcgctc acagttacca ttcccgaacg tacacaaacc attatcctca cccgtggcga 1320
aggcgcactc ccattgccga gaaagagaag ctccatctgc tggcacagtc ccaagcacca 1380
tgtgtatctt ccttaatgcc ggcacgtgag acgatgtaca ggcgaaactga tgatgcacta 1440
ctctcccgac acgcctgtag cggcctgcta cgactgacct ggccggatga aaaaatc 1497

```

(2) INFORMATION FOR SEQ ID NO:540

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 492 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...492

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:540

gagatgacgt	ttataaaagg	cctgacggct	aaagccaagc	agttcgcagg	tcgagcaata	60
ggatacctag	gctctggctc	tgataaacgg	tgaactactg	gcttcggagt	tttttcgtat	120
ctgaatgccg	taggtttctt	ctgccaatct	acaagtagct	tgtaggcttg	atgccctagt	180
tcttctcgct	tgagacactc	ttgaggacac	gattttcttt	acgtagctgc	tctaactctt	240
cttttcgttc	aggggtagct	cactctgggg	ggattgggac	actttcattg	ggacggatga	300
actttatctt	cgagtccaaa	tttactaagc	caagagcgaa	tgaacctga	cttagaccat	360
atttctgctc	aatggctact	ttgctatctg	acccgagagg	taatcctcaa	ggatgctaag	420
gcgttcaaag	ttgtttaaat	gttgcccata	atggatactg	gttgcatccc	gcccactgt	480
caactttttt	ag					492

(2) INFORMATION FOR SEQ ID NO:541

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 558 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...558

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:541

ggatcatcgt	ttgtatagaa	aaaccgctat	caaatcaata	ngtgcctaa	tgtttgctta	60
gaggggggag	tttttagtat	gagagctgag	tcgctccata	caagactttt	gggatttgag	120
ggggatcccc	ctgcctacgg	aaagagcgat	tttgttcttc	cggcggaggc	gaaaagggtt	180
catgatcca	ttggcctttc	ttacgtcgag	ctgacgtgag	gttatcaatc	gcatagaaac	240
tcgaacgaaa	atcgcccaaa	tctgaaacca	aaatccccc	aaaatggtgc	gagatctttt	300
cgttctcagg	cgagattttt	tcaactcccg	aaccaaaata	aaattttctc	agaccacgtt	360
tttcagaact	gaaatacacc	ggatttttca	gtcacgtcaa	tcattcggaa	gcgaaaaagg	420
cagtctgaat	gaaagaatgc	gcagattgtc	aagttccgga	ccctgtggca	tcggatttgt	480
cgttcctttc	accgaataga	accaaccaac	cattaacgga	ttataatcca	ctatgagtaa	540
aaggaccaat	cggggtaa					558

(2) INFORMATION FOR SEQ ID NO:542

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 647 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...647
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:542

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gtcccgataa tcttgcgccc gttgaactga ttggtgaata agctgtgccc cccttcgccc      60
atgagctggt cgatcccttt ggccagttgc ttggctttat cggatcctga ttttcaatgt      120
acttgaatag ctccggcgag aagcttgcaa accgcggaaa tgaagctctt cgccggctgt      180
cagcgtatct ccaatcgaaa attgccggtg tcgggcagac cgataatata accggcatag      240
gcttctccac cgtctccttg cgtgcgcca taaaagccgt aggactgctg aatcgaactg      300
tttgccgagg cggatatgct tgtagtctgt atttcgttcg aacgaccgga acaaatcttg      360
acgaaagcaa tacagctgcg atggttgga tcatgttggc atgtatcttg aaaacaaaac      420
ccgtaaattc ctctcgtgc gatccacttt cctctccact gcagccaccg gctggggaga      480
aggggcaatc cgacgaagca gttcagcagc tcctgcacac cgaagttggt gagtgccgac      540
cgaaaaacac cggagcaagc tgccggcca gatattcttc tttgtcgaag gctgataaac      600
accatcgatc aattcgatgt ccgnaagcaa cttctcactt gagtgtc                      647

```

(2) INFORMATION FOR SEQ ID NO:543

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 636 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...636
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:543

```

gcggcttggt cagtagcttc ttcagccttc attgcagcag aatcgatctc atagcagccg      60
tatcaactac aggagctgca tcttctacca aagtggcaaa tccatagccg tagagtcagc      120
agcttcttca gtcttagcct gagagttcaa gaagcgaatg atacagctgc gattacagct      180
gcaaaaagcaa caaattcttc atttcctttt ggggttaaaa gtgtaattaa tgttctataa      240

```

cggcgaaata	tacagtttct	tttggtacca	ccaaaaaaa	cgaccaaatg	ctgttgcatt	300
gagccctttt	atccggaagc	cttacgcatg	gctattcctt	ttaagacggg	ggcaccgat	360
cttgcgcaat	caagtataga	ggaaacgttt	gagctgtgtt	tgggtgtctt	ctcgaactct	420
tcgtcatggc	ggacaaaggc	cttattttct	cgtatgcacc	cacttgcccg	ttcagttcgg	480
ctcggtctct	tcgatataag	cccatgcctg	atccggagag	atccctttat	gctctatcgc	540
tgtctgtccg	gcacgattag	tgcgatcaag	cgtccgtctc	gctctgtgcg	atactttcga	600
ggacatagga	taattgttga	tcttcgatcc	tattcc			636

(2) INFORMATION FOR SEQ ID NO:544

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 880 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...880

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:544

agcatagtcg	aagtggagtt	gcgagcaag	ctcgaagagg	tgcagggaga	agtggaaccg	60
ccatcctcat	ggaggtagct	acagggcagg	taaaggcttc	accaatctac	agcgacgccc	120
ctccggcgga	tatatcgaat	ccaagaatac	gcagtagccg	atatgtcaga	acccggttct	180
acgttcaaga	ccgtgtgatg	atggtagcac	tcgatgccg	cattgtgcat	ccggaggaca	240
tcattcaaacg	ggcaatggtc	tcttcttccg	taggcaagcg	tactgtaaga	gacctaatgc	300
acacaaagga	gggtatggcc	cccttacggc	agctcagacg	attggtactc	aagcaacgta	360
ggcgtagcca	aaatcattct	caaaggcttt	gccacgatcc	cgacaaatac	gtggaggcgg	420
tcaggcgaac	cggtatcacg	gcaagttccg	tctggaaata	cccggagaag	ctccggccgt	480
agtgcgcaag	gtgccgacaa	tcctgaccgc	tggtatggca	cgacccttgc	atggatgtct	540
tcggatacga	aaccctaaatc	ccgccgatcc	atacattggc	tttctacatg	ccgttgccaa	600
cggtggtaga	atgatgcgtc	cctacttcgt	aacgaaatga	tggatagagg	ggaggtcgta	660
caggagcacc	ggccggtagt	attacggatt	ccatctgcaa	gcactctacg	cttatcgcca	720
tacaggatat	gctctgaacg	tagtggccaa	agggaccggc	tcgccggtca	aaagctctac	780
ggtaacatca	gcggcattga	ccggtacagc	gcagatctca	cagggcaaaa	gcgttatcgt	840
gcaggtggca	ccatgcactt	ggtattcttt	ctgtggttat			880

(2) INFORMATION FOR SEQ ID NO:545

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 604 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...604

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:545

```

gcagaaaggt tggettattcg gtgggcagca aaacgtatca cttctgtca ctccgagagc      60
aattcattcg agatcaagat gacgctcgaa ccgattcaga actgcgcac aacctcacag      120
ccaacagAAC cgatacccgA caaacgcgac ccaatacgtc tatgccggca tgccacgtac      180
ttatggagga aattttctgat gacgaccatc ggactgaaag gcatgttcag cagttcgtcc      240
ggagcacggg ctatgcctcg caagccttca atcagttcct ccacaatcgg gagaaatcgc      300
agggcgtatt atggctcaat atcatggagc cacttatccc tctccggatt catggaagga      360
agcaagtctg gccggccagc cggtttcttc tgaaaccagt gccgttctct caactcagcc      420
gacgtgctta ttccggcttt ctcaagtctt ataactcagag gtcagtggga aaaatcggcc      480
tgtccggcat cccctcatgg ccttccattc ttcccaactg ggaatgtcaa gctacacggc      540
ttgagcaaaa ccgaactgct caagaaatac tttccggaat ggtgcgtatc aaccatgctt      600
accg                                     604

```

(2) INFORMATION FOR SEQ ID NO:546

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 502 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...502

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:546

```

tgatatatta ctgacgatcg gctttcagac gtccggctat tttattgccA gctcccaacc      60
cttctcgtac aggtcatccg tggtagacat cttttgttca aagggtccgc taccatttcc      120
caaccatttt cttctgcaaa aggaacttct ttttcacagc ctgaccggcc catgtaaagg      180
agccgaacac gctcagtagc gatcttttac ctgcggaaga cggatcattt ccatgatatt      240
cttgacggtg aaaagatctc attgctgtat gtggggctac cgattatcac tgccgtgtact      300
taaagatgtc tgccgaggat gttagatgcc ggactgaatg ctaattgtgg catacaacgt      360
tgccgatgcc tncctgcagc atgccctgtg cgctgtatct gccaatactt ncgtattgcc      420
gtacatagtg ccgtagagaa tactgcacct tcttcggctt cgtatcggct catccgatcg      480
tagaggctga ggcttcagag aa                                     502

```

(2) INFORMATION FOR SEQ ID NO:547

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 626 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...626

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:547

tgaattcttg	taagcgtata	aaacctaatt	ctccaacctg	acataagcct	caggccgaac	60
ttagcccagc	gatggaaacc	ttcccgcaaa	gaaagagcag	cgtattgtgg	tactcttcca	120
tacgagtgg	gtcgttcggc	agcgtgacat	ctctccggca	tcattcagtc	gtttgataaa	180
cagattggga	taaatcaatt	gtccaaagga	ttcttgacct	tgaagcgacg	gcgacttttg	240
gtatattgaa	agtgtgggaa	atactaccca	cgggcacgaa	taccatcgta	tcgacaaatg	300
aggagcctcg	aattcattgc	catcataata	ctcggctctg	ccccacgata	gaaaccgagg	360
ttgtagcgat	gggtcagacg	agccgttcct	tgcgaagcga	attgaacata	ttattgocgg	420
gaaacttcac	cggaatatcc	gcgatacgaa	ttcgttcggt	ccattggcaa	aattaccggg	480
atggatcacg	agtcatcatt	cgtaatcccc	ccattctccg	tcatcagata	gtaattgttc	540
ccacataagc	ataggcttcg	taacggtcgg	aacggtagct	gccgaagaac	ggtaggagat	600
ggctttcgtc	ttgttgaggt	tgtana				626

(2) INFORMATION FOR SEQ ID NO:548

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 433 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...433

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:548

ggcgagtcag	tacttcgcga	ataacgacca	agcctatccc	ctgaccattg	gcttggtgct	60
gaagaatgg	gtaaagagac	gggtggcaac	gtcatgcgca	taggctgtcc	attatcctct	120
acgagcagat	tgtgacgac	caaacaggca	gaaccgtctt	tgttgccgag	acagccagat	180
cattttgctg	tgcaaactct	ctatagcggt	gcgcagcaga	ttgatcacca	cctgctctat	240
ttgcttgcat	cgcagcggac	taagcacgaa	tcttgctctt	tgcacatctt	catttcacac	300
ccgtttcgac	agccaaaggc	tgcatacgca	ggtatgcata	gctgcataag	cggtagcaaa	360
gtctacggaa	gatagggtag	gatcaggtag	cttgaccact	tcggcaaaan	tcgtgtgata	420
aagccgactt	aat					433

(2) INFORMATION FOR SEQ ID NO:549

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1237 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1237

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:549

```

cagcggggat gctgatgggc aacttaccaa ttcttgacat aattccgtac tcctttatca      60
ataaacgtaa cacaataact ctcccccaac ttccaactac gagcttcttt atcagtcac      120
actcctcgtg gggtagaaac aatagcatac caaggccgtt caatacgcgg ggcatacac      180
gataaccac atacttcgaa ggccgggacg agacacacgt ttcaactttc tggatggcat      240
ttacttatgt gccaaatcat actttaaggc aacttttatt atgccttgag agtcttctcc      300
tcgaacttat agttcaggat atacccttg tcgaaaagga tcttgatgc tctttcttaa      360
tatttgacgc cggcacactt accacacgat ggcagccata attgcattac gcaaccgcgt      420
caaataatct gcaataggat cgtcattttg aattacaatt aaattgatcc ggaaagccgg      480
acaatattta aactcttacc aactcgcttt ttttacgcgg gggataagac cggcagaagc      540
atttcacgaa attgaatacg ggaaatacca aattggcgca tatagccctt ggacgcccag      600
tcatcgagca acgattatgc aaacgaacag gagaagcttc ttagggagca actgcaaggc      660
ttcataattt ccttcagcct tgagtgcgct ctctttgcag catatttcgc cacaagcttg      720
gcacgcttca cctcggggct ttcattgatt ctttagccat atcaattttg ttttttagcg      780
ttctgaacgg taaaccgaat tctttcagaa gggcataacc ttcttcacgc gatgcgcgca      840
agtcacaaag gtaatatcca ttccgagaat cttcgtaatc gtcgatatt tatctcgggg      900
aaaatgattt gttcattgat tcccaacgta tgttacctct tccatcaagc ttgctttcga      960
tacccttaaa gtcgcggatt gaggcaaagc gatgcgcacc agacgttcca agaactcata      1020
catttgctcc gacgcagagt aaccataaca ccgattggca tcttctttct caacttaagt      1080
ttgagatgtc tttcttaaga tacccgtcgg tacagctttt ctgtccgtaa tagcccgta      1140
atcgcttac tgcaacatcg ataattctct gtcaccgtag ccataccaag accttggttg      1200
atcacgattt tcttcaacac aggactgcat cacgctt      1237

```

(2) INFORMATION FOR SEQ ID NO:550

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 665 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...665

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:550

```

taaatctttc atcaagtaac catagattat gatcctcata tccgatttcc tatcatcctt      60
aatcatagga aatattaggt tatgcatttc actttcttat gtgattttcc accatctatt      120
cttttacgca aatcatcaaa caattcttta ttctacgtct ctggcaaaca taatgagcca      180
aatcattctt agctgttctg ttacattttt caagatttta ttgcttcat cttctagtgc      240
gctatgcaac tttcgtctcc cgatgagtat ttatcttgca attcctttaa tgcttccttg      300
cattttgctc tttgtcaaac tttatttttt ggaagcgcat ttcaaatcaa attctgaaac      360
tcctattgga atagattcca tatctacgtc ttttaacaaag tcttattcca aggtgctgta      420
gtatatacat aatgttcgac ttttgcctct tatcattata tcggttttct atgtcttcgg      480
aaaaatacgt ttaatggatt aatgaagttg ttttcattat tggttctcag ataaatcaga      540
taaaatgtca tcttcttttt ccaaaaatgg aaacccatct tctttctgtg gtacnatttt      600
catctagata tttacccttg gaacataccg cttttaacat ggtagtcctt ctggagttcc      660
atggt

```

(2) INFORMATION FOR SEQ ID NO:551

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 558 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...558

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:551

```

gcggaacattt ttacgcgggtt tttcaaagcc aaaaagacaa taactccaaa taataaagaa      60
gaaaatgaac gtatcgatca agaatacggg tgccgtcatg ccattgctac ggtagcaatc      120
gagaaggctg attatgcaa cgaagtgaag aagctctgcg tacctatcgc caacgtgcca      180
atgtccccgg attccgaagg ggatgggtacc gatgggtatt gatcaagaaa atgtacggta      240
aggggttcaaa gcagaggaga tcaaccgcgt agtcggctcg gaactctatc gntaatagca      300
gagaacaaac tcaatgtact gggagagcct atgcctaacg aggattgcag aaggagtacg      360
acttcgatac cactgacgac tttgaattcg tatcgacctg gctcttcagc cccgtgggtg      420
acngtagtgg tagacaagag cttcgtgttc cttattatac cgatccaacc cacagaggag      480
atgatcgacc gcagatcgaa tctatgagat ccagctacgg acattcgggtg gaagccgata      540
agtgactgcc aacgatgt

```

(2) INFORMATION FOR SEQ ID NO:552

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 521 base pairs

(B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...521

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:552

ggcgtgaagt acagcgatat taaccaactc ggcaacgaag cagagcgcgt gccctcaaag	60
agagctatag ccacctggct aagctgcgcg acgaagtgtc gccatgggca tcattccgcg	120
gacgctgac tggaagacgg tgaatccaac ctctaacagc agttcttcgc aaataatact	180
cttgagagag ggggagatcc gaatgataag ttttcgggtgt tcctttctctt tcttatttcc	240
cgtccttttg ctttttgtgt ttatccgccca catttgtcag ccggtagaga tgaccgattt	300
cggcagcatg taaacgggca aaaagagaaa agtcgtatcc tccttcgcat tcggacataa	360
agaaaaagcc gaaacctct tgcacgaag aagtttcggc ttttcggccg gaggcaaacg	420
actatcaaag actattccag gaggagcaaa ctatctccat aagtcogtgt ccactgncct	480
attgagaaag cttactcgtc aggcgtgccg aatttcggcc g	521

(2) INFORMATION FOR SEQ ID NO:553

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 446 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...446

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:553

ctgaaaaatt tcattcgctc agttttacaac caaagcaatg cgaagaggat ttagatggca	60
aactgggata cgtgctactg atcggaaaaac cattgagcaa tatttggctg acactgataa	120
tacaaaagtc ccaacctctt ttattcaaat gtctccttaa ttccaagtca tccaactttt	180
ggttccatat gcgcctcgac tattttttta gttgtgtttc gccocttgat actgtcggcg	240
atttgttatc ggtcgattta gcngtcacca atgctcatga attgcacaat ctgatgaaaa	300
gactatcaac aaagaaatct catataatcc tattgcacac aaaatattct ttacgcagaa	360
nggaaaggct gcgatgctcc aatcttacgt gtttctttaa aagaaatcgc cttctgggta	420
cacagtcaac tctatcttaa atctaa	446

(2) INFORMATION FOR SEQ ID NO:554

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 667 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...667

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:554

```

ggcatgctcc ctttgattcc cccagggcgtt gatcgagca agggattag tcgtagcggc      60
gcgatatagc cagcttacc atccgcctct ttagctcatt ggccagagca cgtgatttgt      120
aatctcgggg tcgttggttc gaatccgcaa gaggcgcgaa aagcattgca ccgattctct      180
cagcttggtg tgagaatcgg tgcagtcctt ttttactgtt cctaactctt tcaacacctt      240
ggttcgttcc ggatttctaa agggctgaaa ggaaaatcgc agtttttatt gcctcgtttg      300
ttgcggataa tccttatttt tgtatccatt taagggataa taagtccatg tcaaggaaaa      360
accataccca ctatctgttg ctctggatga cactctcctt ctgatcgtat gtttgctctt      420
ggagggccaa cggaatcgcg ctttaccgtg gttatcgatg cccggacacg gaggacatga      480
ttcgggggca tcggtaatgg tttacgagag aaagacatca atttggcccg tggctttgct      540
gtgggacgac tgatcaagag caagcattcc ggatgtgaaa gtgcttatcc cgtgaagaag      600
gatttcttcg ttaccctgat gggaccgtgc cgaatatcca ataaaaacaa tgcccgcact      660
ttttatc

```

(2) INFORMATION FOR SEQ ID NO:555

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 430 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...430

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:555

```

gctttcatct tcatggcttt ccatgtagag atggccggag ctgcgatcaa gcaatgacag      60

```

caggacgcaa	tcctcggaaa	atggctgcaa	tgattttgtg	tcctcatct	gcgcaaagaa	120
catggctaca	gccagaatga	tcaggaagag	ggaagaatag	tccccaaggc	gcaaacggct	180
gctccggcat	atcctcgagg	cgatagccta	cgaagatgga	tatattgacg	gcaaatactc	240
cgggcgggat	tgcgcaacgg	caaaaagatc	cagaaaatcc	tcctccgata	gccatgggtg	300
ttatccacta	tatcggcctt	gatcagtggc	aacatggcat	aacttcaccc	gaaggtgaat	360
cccgcggata	ccggaaaaag	gtgagaaaag	aggatagata	tggatttcac	ggcaaaaaaa	420
gaagaccact						430

(2) INFORMATION FOR SEQ ID NO:556

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 568 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...568

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:556

gcccgaata	cggaaaatca	aacaaaatgt	ttcactaaca	aaaaagataa	cgaacatgaa	60
aagattatta	ctctctgctg	ctatcctaag	tagtatggtt	tgtttaatgt	caatgcacaa	120
gagttgaaaa	cctctgctga	catgaaagtt	cttttaagaa	gaatgtggta	ttggagggtat	180
ttactgccga	atggtgggtt	actgtccagg	tggaaaagag	cgcattgcaa	aagcaattga	240
aatgtggatg	atgaatataa	ggagcgtggt	tttcagacat	ttgttcatta	taatatggga	300
tctcaaaaaa	atggcctcgt	gttggccaac	ttttcattgc	attgatcaaa	cattggggcat	360
tccgggtttt	ccgacttttt	tcagtttgcc	gttggagaaa	aaaggtgaaa	atctttcaat	420
aggtgctcca	atagcaatta	aaataagatt	atgaaagggt	ttggtgatgg	tacagccctt	480
gcagaggtaa	cctttaaatt	gacncaaagg	tgcaacaccg	gaagatgtat	tgtaccagca	540
catttacctg	gtaaagtcca	tgccctgac				568

(2) INFORMATION FOR SEQ ID NO:557

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 647 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...647

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:557

ggaaaatttc	caaggctcgtt	ctcgtttttac	tttaattgtc	cataatgtat	ggtaattagc	60
atgttgtaat	gagcacgta	cgcctacgct	ggctctcctca	tcgtgcagga	gtgcatcgta	120
cgcctacgat	cgtaagtgtt	tcgtaccgct	tttcaacact	tcttcgtatt	cctcggcata	180
atcttcaatc	tcgtacaaaa	ggatttgctt	gagagcgtag	ggagaaaagg	gatggtttgc	240
ggtgaaaaag	atgccgtact	ccgacaagat	ttgttcggat	ggtttagaaa	ggtgagtgac	300
gggtaagaag	agtcggttag	ccgggcaatc	cgttgatgcg	gcaaaatttt	gaaggctcagt	360
tcgggaacaa	tttctgtgag	attgagtga	gtcaataggg	aacacttctt	tccaatttat	420
tggcgcgcag	gcgttcgtaa	tatcgcgacc	gttcaggtag	gccatcagct	tctcatgcgt	480
attgtagtta	cccagagttc	ttggaaaact	gacgtccgct	cttcgcaaat	gacctccttt	540
ccaagccgga	caatcgtagc	agccaaagca	ccggcgcaaca	gacaatcctc	gtactcatcc	600
tgttttgcc	gcccgaagcc	agtaccatga	ccggttttgc	ttggcga		647

(2) INFORMATION FOR SEQ ID NO:558

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 367 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature
(B) LOCATION 1...367

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:558

gcctgctgga	tgatgaagct	gttgatgact	ttggaggcag	actgtcccag	acggtcttta	60
tcgtcagtg	caaatgtttg	gagctgaggc	acagcctgct	gcatagaact	tgaccgtatg	120
ctgctctttg	tgatgctcgg	agacgagagc	agaaagtcgc	ggcaaatagt	ctccgacctg	180
gtgtgcttgc	agtcctctcg	acctcgtcgg	caatcataatc	gtcnagaaaag	agaaagagag	240
agctgtcnga	tagatgacaa	tttcttcctg	atgacgcccc	ccgttttgca	gggcttgccg	300
atgagatcca	acgttgccgt	cagaaaatct	ttctccatgc	gttcggacgg	aacggttcgt	360
tgctgtg						367

(2) INFORMATION FOR SEQ ID NO:559

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 472 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...472

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:559

agccaacatg ctccgactgg atttgctcga agggctgctc acgaagctgt ggcatacgg	60
gcagcgatca gggattgagc ctgcaagtaa ccgtcttacg gccgattaca catattgtag	120
gaaggctcctg tcaggaaccg aaagaaaatg atcgaggagg aaacgaggct gattcgctcc	180
tcttagaaat cccgacttat gtccccaacc ggcgaactcc tccttccata acaagagtcg	240
cagcaccctc tcttggtgt acataaataa cttgtatctt tgtgcaacta taaaaagaat	300
caaatactat tcccctttta tggaattaaa aaagactaca cgttcgaaag ccgatcttat	360
cggagaacgc gagatacccg gccatattct attggcgtag agacgctgcg tggatatagaa	420
aacttcccca tcagcaattt tatctgaacg attacccctt gtttatcaat gg	472

(2) INFORMATION FOR SEQ ID NO:560

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 777 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...777

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:560

tttccgagcg gttgcggagc atgaaaaagc ataattgcgg atcgaaaaag atggttcgag	60
aaaaaaataa aactcgagcc aaaagcaaaa aaatctcggc gtaaagattt tccttggtgt	120
tcgagttttt gagatttttag gctcggcatt ctccgtcttt cggcaccaaa aaacaaaccg	180
atatctactc ccgaataaca atctctccgg aatcgtttct ataggaggcg atggatcagc	240
ttgtgcctct cgatcagtc attacggggt atgccggtct tcgattcggg ctgtcgaaa	300
tggatggatc ggcggtgctc cgcttcacgc ctacaggggt gtgaaaaatt catttcggcc	360
ggattaacta tggaattatt tgataccttt gctttgtggt ttagcatatc acagtcggta	420
tttatataa ggaagaagtc agtacacaac acgaaatcgc ttgaaaacaa tatgaagaag	480
gaaatcaaat cagtctgatg taccgcgaca tgtggcagtc gtcaggcaag taccaaccag	540
aaaagatcaa ttggaacgca tagctcccggt tattgtggag atgggttgtt tgcgcgagtg	600
gaaacgaacg gaggtgcatt cgagcaggtg aatctccgta tggggagaac cccaacaaa	660
gcagtgccgc ctttcaccaa accgctaacg aagcgggtat tcagaccac atgctggacc	720
gcggactcaa cggactcgta tgttccccgt accggctgat gtgcgcgggc tgatgta	777

(2) INFORMATION FOR SEQ ID NO:561

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 685 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...685

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:561

gaaaacttcg	actctatttg	atccccgcga	atttgggaat	gaatacagtc	agccataacg	60
tccggcatgg	tcatgaaaag	catcgcgag	tccgggtatg	ccgatacacc	gccggccaag	120
gccacttggt	tgatgctatg	atctttgccc	cttggcgaaag	tttcttcac	aagatgtcta	180
tgaccgtgtg	ctgaaggatg	cgcacagatc	ggccttggtc	ttttctatga	agtcgggatc	240
ttcggcaggt	tggtcgcgca	gagtatagag	gaatgatgtc	ttgagtcgac	tgaactatag	300
tcgtaaccgg	acacatgagg	acgggcaaaag	cggaaagcat	cgggttgccc	tcggaagcca	360
acttattgac	gatggggcct	ccgggataac	ccaccccatc	accttggcac	atttgtcgaa	420
agcctctccg	gctgcacgtg	catcgctctg	cctattacct	ccatatcgta	aggggagcga	480
accagaataa	ctgagagttg	ccccctgaaa	ccaacaagca	caggaatggg	aaagagggag	540
ctgtgactcc	taccgggctc	acgaaggaag	ttggccagga	catgggcaga	aagatgaatg	600
acttcagca	tcggaatgcc	caatgaaagg	agacaatcct	ttggcaaaaag	ctggtgccta	660
caanggagcg	atcccagcaa	aaccg				685

(2) INFORMATION FOR SEQ ID NO:562

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 765 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...765

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:562

ggcttttttc	gcaatttttg	cgatggcttg	tgcatgccag	ggagggacgc	cggcaagtcg	60
ttcaccaact	ctacaggatc	tccgggcgaa	atgatgctgt	catggacgac	caatatctgg	120
gatcgctgt	cggcgaagcc	atctacgggc	aatgaccgag	gtggctccgg	ctctgaacca	180
aaacgagccg	atcatgctgt	ttcgcgcgta	tcggaaaagg	attttacggg	cttcctccgc	240
tatatcgcaa	tgtgctgcag	atcgacatca	accccgatat	attcaccaag	actttotcaa	300

atacggctat	gaccagtggg	ctaacgggtca	gctcgtcgtg	ctgtcaacag	tcctgcgaca	360
gattcactga	cggcctacgt	cgaatccaac	aatcggccat	acagaacctc	tttatccgcc	420
acgagctttt	cctcttcggc	cgcttttgga	gaaagactgc	agtgcggatg	ccgaccagcg	480
cgtacagcgt	tgttcggata	ccatatcaat	gtgccggccg	atatactcag	ccacaaggag	540
gcaaagactt	cctgtggatg	tccaacaatc	agatgcgccg	gcgcaagggt	ttttggtata	600
tactttcccc	tatcgcggag	catcggatct	gggactcatc	gtatggtgga	ggtgcgtgac	660
tcctgtctca	aagccaatat	agaaggtcgg	acgcagggtc	ttatcccgtc	acgaagccgt	720
atgctactga	agcatgttac	gtctacccgg	gcgacaaaaa	gcagg		765

(2) INFORMATION FOR SEQ ID NO:563

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1813 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1813

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:563

ccatcgatct	gtcttttgcc	ggtaaggcgt	cctctcattg	gccgaacctga	gcgttctcga	60
tctgatagcc	aataacgaat	ggaagcgtec	tatctattgg	ctattacgtc	tcogagcaat	120
tctttctcca	acctgccgga	ctacttggtc	agaccggtat	ggccaatcag	tttgtgcctt	180
ttaaggcgcg	ccgcgtggcg	ataacatcga	tgtggaaaag	acctatacca	atgtgatgac	240
caagtcgcgt	tcggaggggc	caacaatccc	aagggtgtact	tcgatgcaga	tattgcaatt	300
ccaccaatac	ctatcgcgta	gctgtgtttt	ctccgttggc	aaagctctgc	tcgaaagagg	360
cgataccggt	cgtgcccgta	aggtgctcac	caatgcctcc	aagagatcag	tcctgaagcc	420
gtgccctatg	attatcgctc	gtggtattgg	cacaaaccct	gtacgatgca	gatatggtgg	480
ccgacgcaga	cggatagtca	aggccgtggc	aggctcttcg	atgcgtacgc	ttaactggtc	540
ttccgcctgt	cggaaatccaa	attcatgcaa	atgctttccg	aaggagagtc	gacagggaga	600
tgaatacggg	tgtctacggc	cttcggctga	gtactgctat	aatagcaaag	tgttggatga	660
atatctgccc	gtgttccaga	actatttaag	atgctctaca	ctgatgagca	gggtaatagc	720
aaaccgcaat	aaatgagctc	agactcgtag	aacgacttat	ctgccgtgtg	cccattgtgg	780
accggctttg	ttccccgggtg	ccacgtggcg	cattcctgcc	aaagaaggaa	aaacatctat	840
ctgactttcg	atgacgggtcc	cataccggag	ataaacaccct	ggtattggat	acgctcgatg	900
aactcggggg	gaaggccacg	ttcttctgtg	tgcggataat	gtgcgtcgct	atcccgaact	960
ttttgcccgga	gaatacagcg	cgtgggtcat	caggtcggca	atcacacttt	ccaccatctg	1020
caagggctga	agtcctgtaca	cgtacctatc	tgaaagatgt	ggaagaggct	gaccgactat	1080
caattctcgc	ttcttttcgac	cgcgcgatgg	ccatcttcgc	ttcatgcgac	cctcctgctt	1140
agcaatcact	acgacattat	tatgtgggat	gngatccgcg	cgattataat	gctcgccttt	1200
caccgcgatac	cgcttttggg	tcgggtgttcg	ctatgcgcgc	aacgggtcca	ttattacctt	1260
ccacgactcc	ctcaagcggc	tcccaatatg	cagcaggcca	tgccctgcgc	tgtgcgctgg	1320
ctatggatga	aggctatacc	ttcaaattgc	tgggcgaccc	ggccgactaa	gcgtttacct	1380
gttttttctg	tcgatgatt	gtccttacgg	aagacggatc	tccactatcc	tttcgcctca	1440
ttacggcgaa	tactaccact	ccatacacgg	gcgtgtcgtg	agagcgaaca	tgtattcggt	1500
catacgggac	tgttgcacct	ttggaatctt	tcgatccttc	cggtaactttg	tatctctttg	1560
aagtcggatc	ggaacggctc	tcaatgcgct	actgactctc	cgcgaacaac	gatgtcgggt	1620
ctctccatcc	attactctgc	cattgagaaa	tttctctctg	aaaggtgtga	tatgagcatc	1680
ttcgctttttc	tgtgggaatg	gctgatgaag	acaaatcctg	caaagtctcc	accatgcacc	1740

```

gtggggaatg gattgtgaaa tatgcccggc ttcacgttgc acaagatagc atccgatctg 1800
accgatttac att                                     1813

```

(2) INFORMATION FOR SEQ ID NO:564

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 466 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...466

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:564

```

cgatggatat gaccgagttt ctggcacagg attacgatga tattcgtatc cgggtcaatgc 60
attgcgtttc tctgtcttca acgaatcgat gaaagtggag tcgtggtact gcctgtattc 120
gaggggtacc gtctgcctgt ggatcctgca atccttggaa tatcttctcc ctttcgcccc 180
ttgctcaggg gatgaaatcg tctggaaaga agaagccggc aaaccggcct tcaaggttgc 240
caatacagagt acggtgcgcg atggagcaact acgctctccg gtatcgactt cgcttggtg 300
cattgcatac atggaacaaa gatgcccgtc atcgaagtac aggcattgtg ccgacggaaa 360
tcacgtagc cctcgctatt aatcgatatg gatggtcggc ggcgacctt tccgtacccc 420
gtcggacagt tggttttcaa ggagagcttg cgttcaatat cgacca 466

```

(2) INFORMATION FOR SEQ ID NO:565

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 631 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...631

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:565

```

gaggatcccc agcggacatt ctctctgcct aacaggtgga ggatgtcatc agggaattga 60
ttaaggagat agacaagctc ggagtggatt cggtttggtc gtaattatca tttcgttctt 120

```

catcggagcc	gttatcacta	tccagcttct	ctgaatatga	cctctccgct	cattccgcgc	180
tttacgatag	gttattcaca	cgtgagatca	ttctgttgga	gttttcttcc	acggttatgg	240
gggtctattct	ggccggtaag	gtggggtoga	gtattgcctc	cgaattggga	accagcgtgt	300
gactgagcag	atcgatgcta	tggaggtgat	gggtgtgaac	tcgccaatta	tctgatcctg	360
cctaaaatca	tcggaattcat	gctgttcgtt	ccgttctgag	tataatcagc	atgtccacgg	420
gtattgtcgg	tggttatctg	gctgttcgtt	gggtgccgaat	ttgcctcgga	gcgactttga	480
gtacggtttg	agcttttctt	ttccccttat	aatgtgtttt	actccattat	caagtcgggtg	540
cctatgcttt	catcataatcg	agcgtggccg	gttactacgg	ctatacggga	aaggtggggc	600
atttgcaggt	ggggaaagca	gtaccaacgc	t			631

(2) INFORMATION FOR SEQ ID NO:566

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 929 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...929

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:566

ggcatgtgcc	ttggtggatg	ctttctactt	gcaactggaa	aggaagtatg	cgagctatac	60
aaacgaagcg	tagcaaaaat	ggaggaagac	cgtccgcaaa	ggaaatctac	gatatggatg	120
ttogtaagat	caagatgaac	tattggcttg	cctcttctcc	aagagtcttt	ggatgcctta	180
tgggatcata	ctggcttttt	gttgatttgg	cttttcctct	catgcttgca	tccttgcgga	240
ctgccactat	ctgctgcaaa	taagccggaa	gtggaatgaa	gaagatcgtg	atagcataga	300
ctccttcaag	ggttgtctct	cctctgccga	ggcaggagaa	gcagcggtat	gggaggtggg	360
ctgttggett	cacaccccca	gcgattatcc	ctgggggtatt	ttttgtttat	agggtgttgc	420
atttactatt	ggaaaataca	tataatctca	ccctttatgg	gataatcaca	ttgcctttat	480
tgacttgtaa	agattgatta	tgaatcaaat	gtctttatta	tatttgcaact	gagtaaaaaa	540
ctcactctac	tgagtaaaat	gtgcggatat	gtataaaaga	gcagagtaca	tgtgattaca	600
gatcgtctta	aagatcggag	gagattcatt	caagtogaat	gggggctcgt	caaatcggaa	660
aatcaacggt	tgtcaagcag	gtgctgagga	cttggatgca	ccctatcagt	tcttctcagc	720
cgataatggt	ccgacgtgaa	cgggtgcttg	atttcogatt	gttgggctgc	tgtccgtagc	780
ctgaggaggc	caaggagtgg	gagagcatta	ttcttgtgat	cgacgagata	caaagattgc	840
taattggagt	gaagtcgtga	aaaaagagtg	ggacgatgat	acttccatga	ccgtaatatc	900
aangtgttgc	tgtttgggca	ntagtcgng				929

(2) INFORMATION FOR SEQ ID NO:567

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 676 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...676

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:567

```

gggaatgggt cttccattga ctatgatttg atgaaattaa aatccggcca ccaatcggta      60
atgccgaaaa aatcagctcc acaaaggtaa gattatcagc aaacgaaaaa gatgctttgc      120
attcagagac cattgttttt gctctgagct atcggcaaat gtactcatcc tgcaaaaaaag      180
aagagggcga cccaagatat ttggatcgcc ctctgttctt tatgctaact tcattcagag      240
ggctgcggtt cctcctgaaa aaagtgttgt cagatcatat aactttatct tttgcatcca      300
ggctcgcaat gatgaaattg ccctgtgcat cgaacagcaa atctactcct tgttggttgta      360
cacgatttcc gccttgatat tgccgttgga cttcttttga tgtccttgat aaatgcaccg      420
gggtagttcc ggttgacgta atgatgatct tagccttgat gtgagcagga atgttgctgt      480
catcatcctg tcgtctacgt ttccgctgat gaggttgccc tgtgcatcga acagcaagtg      540
tactccctat ggtgtagtaa attctacgtc ataagtacca tggagttagc tcgatacttg      600
tgaatgacag cttcccggtg attctgatga catagctatg atcagagcct gatgttggcc      660
cgaatgtgtt tcgatg                                     676

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(2) INFORMATION FOR SEQ ID NO:568

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 493 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...493

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:568

```

ggctggagaa taacaagaaa taaaaagacg atgaatcaat tgaccttcac agaaaaacga      60
accttaacga ccaatcaagt ataaaagcga caaaagctcc ccggtctcct tcttcgtcaa      120
tgaatcgaag ttatagtcca gcgaagccat tgaacaatgt ttcgggcgga aagattatct      180
ttgtcccat tcttatgaca ctctgtttag cgaagttaaa atttatgagt cgcagatttg      240
ccgaaacgag agcttgatt tgtcccggtg caatgaggag gtgttgccg attgatgcaa      300
caccgtcttt ttgaagaaag tctgaaaagt cgcgaggggtg cccctcgttc gttttttatg      360
agggacctcc ctctgccaac gggatgcccg gctccaccac gtaatggctt cgtgccatca      420
aggacactat ttgtcgttac agacgatgaa gggttttccg agtggaccag gaaagcccgg      480
ctgggatact acg                                     493

```

(2) INFORMATION FOR SEQ ID NO:569

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 359 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...359

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:569

cctgcccgtg acagtggata agtccatgat cgggtgtaccg ggttgccacg tggcatactc	60
attcttcgca agacggaaga aaagaatggc cgtacctaata gatcgacacc aacgactctg	120
aaaatgactg tatagcccgt caaggacaaa ctcttttcct gcaagattct aatagaaaag	180
tacattagta tatctcgaat atagactccg aattattctt accccgatct gtgcagacag	240
tgtcaccctc aaaagggcga ctgtctgcat agtaatttga tacgagacac ctcttgccca	300
gatcgcaagt canggggctc gaatacaatt tccgatgatc acagaaaaaa gaatggact	359

(2) INFORMATION FOR SEQ ID NO:570

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 562 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...562

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:570

gcaacttcgc ccctgtatga gaagcctata ccgaggggca agcggccggg cgaaaagaat	60
agtagccggc aagccgatag tcttcgaaat gatagtctcg ccggtcgaat cggacaccaa	120
atagggatag taggcttcgg cgttgcgaga gcattccagc cgatgcgttt gtgcatgcca	180
cgtgagtagg aagcacgccc tgcaatgtgc catagttagc gacactgatg cgaccaccg	240
attcggcgag agcggaggag agttattgcc gttgtacgga agatagtgcg ccgcatatcg	300
ccataggccg agccgaaacg aacataggcc gaatcgcgca gctatcgctc aacgggaaaa	360
gatcgcccc ccttttttct ttcgtttgca caaaatctcc ctgtattgcc tttcggtggg	420
agacaggacg atctgatccg aagctcgaaa ggagtattga gcatctgcgc ctcgacagac	480
aagtgcacag tcccaaaagg caaaagaaga gagcgaccgg aaggcggtg tatcttacat	540

ggttttcaat aggggtgaatg tc

(2) INFORMATION FOR SEQ ID NO:571

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 511 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...511
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:571

gggaaaggcc agccccaac tcctcgatgg tatcatggtc atgtactacg caacgccact	60
cctctgacac aggtagcatc catcaatacg cccgatgcaa gaccatcggt gtcaccccg	120
gggagcggtc cctgatcaag gatatagaaa ggctatcatg gactctccgc tcggcattac	180
gcccagagaac aacggtagct gatccgtctg ggccttcctc ctctgacaga agaacgccgt	240
cgccattggt gaagcagacc aaaggagatg ccnaggacgc caaggtgagt gtgccaatgc	300
ccgtcgcgat gccatcgatg cgatcaagaa aagcgtnaag accatggtag tcctgaggac	360
gtagccaaag atgcagaggc agagatgcaa gaggttcacg atcggtatat caagaagatc	420
gaacgaaact ctttgcccga aaggaaaagg aaatcatgac ccgtgtaagc gtgaaaaatc	480
tatccactca cgattgaaag ccagagtttt t	511

(2) INFORMATION FOR SEQ ID NO:572

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 955 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...955
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:572

gagtaccgtt tcgctggtgg catgtaccag acttctacca tatcgccgtt ttgaggaact	60
ggacgccgtc gatgctcgca cccggtatgg tgatctgccg aacgtttcgg ggtgcatgaa	120


```

gttgatatccc atctcgctccc gatagagtagc tgatagggg gcggttctat tctgacctct 180
tcgacctnga cgccgcgttc caggctcttat cgaggatacg tcctgtagtc acgttcttga 240
gtttgtgcgg acgaaagccg ggcctttgcc gggcttgacg tgaaggaatt cgacatgaag 300
tagtactgtc cctcaatttc gagacacatg ccgttgcgaa agttgccgtt gtagccattt 360
gggtataatc gtttttttaa tgatgacgaa agggtagggg gcggttctcg aaatgctgcc 420
gatccttcgg gatataggca agcctcctgt tgcggaggca aaaataagaa aaattgtccg 480
cgaggaagag gtcgattatt ttcaaattga gtgtacattc cggatatcaag aaagacatgt 540
aagagaaggc atcctgctca ttgatgtcg ggttcctttc ctatcttagt cgaaagtgtg 600
tttggtaggg caatttgtcc tgcctgcttt gcagtatgtg tgattttgtt tgcatagtct 660
taaaaatatt gacataatga caacttaaaa gatttgtttt ctatatttgg agtcgccgat 720
attggcttaa ataccaggtg tagggcatgt tggtttgatg tgcctgatat accgtcctaa 780
ttctctaccg aatcaattat ggttttgtca gaaaaagcaa agtattatgt tgacttgagc 840
atcgctacgg tgctcacaaac tatcatccgc tcgaggtggg tattctcgtg gtcaggggact 900
tatgtgtggg atgtggatgg gaagcggttat tcgacttctt tctgcttata gtgcc 955

```

(2) INFORMATION FOR SEQ ID NO:573

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 433 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...433

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:573

```

ggatatatgga gcgtcgggga agcgggataa agaaaaatctt tgaagcaaca agaattcttta 60
tggtatatacg gaagaaaaaa agccgttttt ccttgtagata aacagaatga cttcttctctg 120
acgattccga acgttaatta tcgttctagt ctgttaccac acatgacacc atacatgaca 180
ccatacatga caccatcatg acaccataca tgataaaatc gccttgntac tttccttctg 240
tcaaagcctc gcagcagaga agagatgatg gagtttgtgg gtttaagaaa ccgcatcatt 300
ttcagaagaa atacctccgt cctttattag aacaggaaaa gatgaaatga ccattcctga 360
aaagccccaa agtaagaacc anaagtatcg aagaaggagg tagtcaaata acatatccat 420
tctctaatat aag 433

```

(2) INFORMATION FOR SEQ ID NO:574

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 567 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...567

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:574

agttgtcaac	agcttccata	agctccatca	ccttgtcttc	ccactgaggt	ctccattcaa	60
agcgcccaga	gcagaaccac	ggatgatagg	ggtattgtac	catcgaaatc	gtagaaagaa	120
aggagttcgc	gcatgtccat	ttcaacagct	cgagcatctc	ttcatcgtct	accatgtcac	180
atttgttcat	gaaaacacca	gacgaggaac	gtttacctga	cgagccaaaa	ggatgtgctc	240
gcgagctgag	gcatagggcc	gtctgtagct	gtcacaacga	ttatagcacc	gtntctctgag	300
cagcaccggt	aaccatgttc	ttcacatagt	cggcgtgacc	cggcagtcta	cgtgagcgta	360
gtgacgatta	gctgttnggt	attcaacgtg	tgagtattaa	tcgtgatacc	acgttccttt	420
tcttcgggag	cgttatcaat	taatcaaatg	aacggagttc	tgaaaagacc	ctctttgcc	480
acacagttgt	attgcagctc	gtcaaggtag	tcttaccgtg	gtccacgtgt	ccgatcgta	540
aacgttaacg	tggggtttcg	atctgtt				567

(2) INFORMATION FOR SEQ ID NO:575

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1008 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...1008

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:575

acgccaaacc	ggacttcagc	gacgaagacg	gtacacgggt	agcagagctg	aggacaaatt	60
cgccgaaatg	gaaggctgga	atgccgagag	cgatgcagca	tgttgctgag	cggacttggc	120
atcaaagagg	atctgcacta	tatgctgtga	aggatctgag	cggaagcaa	aagggtcgtg	180
tgttactggc	gcgcgcctat	acggtaagcc	tgacaacctc	ttgctcgacg	agccaacgaa	240
cgaccgcgac	tcgagaccgt	ttcatggttg	gaaaactatc	tgagcaactt	cgaaacaccg	300
tgctcgtcgt	aagccacgac	cgccacttcc	tcgattcggg	ctgaccata	cgggtggacat	360
cgacttcggc	aaggtaaca	agttcagcgg	cactacagct	tctggtacga	atccagccag	420
ctcgcctctg	gccagcaaca	gagcagaaca	agaaggccga	agagaagcgg	aaggagttgg	480
aagagtttat	cgccgcttca	gtgcgaacgt	agctaagagt	aagcaaacga	cgagtcgcag	540
aagatgcttg	agaagctcaa	tatcgaagag	attactccct	cttcccgtgc	tatccgggta	600
ttctcttcac	acccggtcgc	gaacccggca	ataagatctg	gaagtaaagg	ggctgaccaa	660
aagtatcgaa	gggcaacttc	ttttcctgat	ctgaacttca	atgtcgaaaa	ggacgacaag	720
attgtcttta	tcagcgagat	cctcgtgcga	tgaccgccct	attcagttat	atcaacggag	780
agatacaccc	gatgaaggta	catacgaatg	ggggcaaac	attaccacgg	ctttctgcc	840
ctggacaatt	cgggctat	caatacggat	ctgaatctcg	tgagtgggtg	tctcagtttg	900
ccaaggatac	gaacgaaatt	tttctcaaag	gttcctcggc	cgtatgctgt	cagcggagag	960
gagattctca	aaaggcatcc	tcctctccga	gggagaagat	ccgtgatg		1008

(2) INFORMATION FOR SEQ ID NO:576

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 444 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...444
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:576

```

agcaaaccoc tccgtattat ccgcatagat gatactgcgc gaagcattgc gagcagaccg      60
caatgagcat tcatgccgta ctccggccaca tcttccagct tccaccctga gcacctacgc      120
cggggacaag caagaaagcg tccggcgagat ctccgcgaata tctttcagca tggaggcctg      180
cgtagccccc accacaacat cagttgaccg gcattatccc acgtctggct gatacgaata      240
acgcgtcgaa aaggtattct ccatcgccat ccgcgcacat ttgaaagtct tgcgaccttt      300
gttcgaggtc agtgccagaa gcaccgtgaa cttgcctgca taatcangaa agggctgatg      360
ctgtcctctc ccatataagg agaaacggtg aggcattccac cttgagatgc tcgaagaacg      420
aacgggcata catatcactc gatt                                     444

```

(2) INFORMATION FOR SEQ ID NO:577

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 384 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...384
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:577

```

aggagcagtc ccacaactgc aagctatgcg acgtatgtct aaggagaaaag acggagaact      60
gcaccatcat gaagtggacg acttgctaca tttcctcgcc aacgtttgac cgaagaaaca      120
ccctacgtac tgattgcgga tatctgcgag aactgcatca ccatcccgac gtcgtgctca      180
aagcaatacg cttcgtatga aagaatcctg gcagtactcc actgatgggtg ataccgtctt      240

```

```

cctgagcaca aacttcccgaggactgaac ctttagcccc cgctcgctc tcccgcctta 300
cagattgcac cttctccaat agaattatag aaacctttgc aaaagagaag attatcaaga 360
aggatatctt tttgctcacc tatt 384

```

(2) INFORMATION FOR SEQ ID NO:578

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 540 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...540

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:578

```

ggagaaagac gatgccgtat tcggcaccac cctactgcgc aatgccatct caacggacag 60
gaatatcgcc atatcatccg tgaaaatctg atcaactgga agtggatcgc atagcggaca 120
tggatatgct gatcatgcaa ctggctacgc cgagctgctc cacttcccga atattccggt 180
cttggtaacg atcaataata catcgacctc tccaagctgt tcagtacacc caagagcgga 240
acgttgtaaa cgggttgctg gatgctgtgg tcaaaagtct cagagagaaa ggcaactact 300
caaataagag caggggcaaa acagctatcc cccagatttg acaatgacag acgacaaaaa 360
gattcgggca gccatcgtag gctacggcaa tacggtcggt atgccttgca agcgcttaga 420
gaagctccag attttgaaat accggcattg nccgccgcaa tccgccgagg ttcccttcga 480
gctcagcctt ccgtgtagta tccgacatcg agcactcgaa tcggtcgatg tgcccttggtt
540

```

(2) INFORMATION FOR SEQ ID NO:579

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 535 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...535

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:579

```

ggcgaatcgg tttcataaca atgagaccgt tgcacaaaaa cccttccacc cctcatatca      60
atcaagacag atacaagcat tgatttgacg aagaaaggga gcttcatgcg gtctctctgc      120
aaacctcaag aatacccccga tggaaactgg gaaaatttct gtttgtttgg tgcccatatg      180
tttgagggtt gatcttcctg aaaaacactt aagaatcagc tctgcggcaa aagacttcaa      240
tgaaatccta taaaatagtt gcaaacagct gatagttagc gcattgatgg gagctaataca      300
gctgacaatc gtttcttatt tctcgctat ttgacgagga aagagtactt ctctaatagga      360
aacttgggga aatttctatt tgctcgtgct cctataccga aggtttgacc tttcccgaag      420
acactaagaa tctgctctgc aaaaagaac tcaatgaaaa tcccctgcaa cagtcttaac      480
agtgcaagag cgaaataact aaatatgttg tgttatgaaa agggagctat atcag          535

```

(2) INFORMATION FOR SEQ ID NO:580

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 667 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...667

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:580

```

ttatcagaac gagcaccgta cctcagactt ctttcgagcg tgctattatc cttgctagat      60
tatttcggac agcagggtat ggggcaaggg cgtaagttcg ttttaagcaa cccgtcaagc      120
ttctagactc tacgaccatt accctttcct tgccctatac gattgggcta aatacacaca      180
tacgaaggga gctggttagct tcatacactc ttagacttca agactctggt gcctgaatat      240
gtgcaattag tgatggtaaa ggacatgatg gcaagatggc caattctatt cctaccacgc      300
aggaagtatc gtctgtggtg accgtggcta tgctgatacc gcctgctcaa tagttgggac      360
agcacccaag tgagttttgt agtacgccac ccaggtcctt aaaatatgag gttattcaag      420
agttggaact cccagaacat ggcacagca aatactagta gatcagagag tacggctcac      480
aggcgttcag cgcaaggcaa gtacactaag ccattgaggc atattgccct ctacaacgaa      540
aacatggcga tgctgttgag ttattgacca acatagacac ccttgacagaa gtagtatagc      600
cttgtgtgat cgttcaagat ggcttatcga gattttcttc ggaatttgaa gcaacgcctc      660
agcatga

```

(2) INFORMATION FOR SEQ ID NO:581

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 498 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...498

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:581

```

gtccccgctt ctcaggacgg acagccggcc tacatcaaac gaatccatcc cgacgcaatt    60
atatcatcag gcgagccagc aacctctoga aagagtccat atactgggag ccaatttgga    120
tgctgcctg ctggtctgta ccatcaagat ccggtgacta ccaccgtctt tatcgatcgt    180
ttctctgcta cggcagagcc tatcgcgtag cgggttattct tgtattcaac aaaatagact    240
gctatcgcaa gaagatcgct tgcaattgga ccggtgtcgt gctgtctaca ccgcataagg    300
tacccttgct gccacgtgtc ggcgattacg ggcgaaggcc tccggatctc aaatccctac    360
tcgatggcaa gctgacactc cttgccggcc atcggggggt ggcaaaaagct ctttgatcaa    420
tgccctgatt cctcatgccg attgcgcaca gggggctata tnccaagccc atcataccgg    480
cattgcatac accacatt

```

(2) INFORMATION FOR SEQ ID NO:582

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 508 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...508

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:582

```

gtcgagcaat aggataccta ggctctggct ctgataaacg gtgaactact ggcttcggag    60
ttttttcgta tccggatgcc gtaggtttct tctgccaatc tacaagtagc ttgtaggctt    120
gatgccctag ttcttctcgc ttgagacact cttgaggaca cgattctctt tacgtagctg    180
ctctaactct tcttttcggt caggggtagc tcactctggg gggattggga cactttcatt    240
gggacggatg aactttatct tcgagtccaa atttactaag ccaagagcga atgaaccatg    300
acttagacca tatttctgct caatggctac tttgctaact gacctgagag gtaatcctca    360
aggatgctaa ggcgttcaaa gttgtttaaa tgttgcccat aatggatact gggtgcatcc    420
cgcccaactg tcaacttttt tagtacacgt caactttctt ctgatttggt gttcgacttt    480
tcctgatgga cgaacgcttc ttcttcgt

```

(2) INFORMATION FOR SEQ ID NO:583

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 486 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...486

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:583

cttccatcga	cggctccgat	aagcgcaaca	atctggtgct	gtccgagcta	atacggctta	60
tcgcaccaat	cccgaaaagg	tgaaagtatg	gtatgagcta	gccttgtctt	acagaaagag	120
gcagattcgc	tctgtacctt	tatagatatc	tgaagttggc	cattgcccgt	gagtcggatg	180
ggaaagatgc	aaaagtaatg	atatcagacg	aaaggacaat	ctcgatgctt	cttccgtaat	240
aatgcgaatc	ccgatcaacg	ggtnaaggca	gcacacttcg	caaggagggtg	gacagttccg	300
cgagctggtc	gctacactca	tgaccgacaa	ggcgaagttg	aaatcataga	acaagccctt	360
aacacagaat	ccggcaccaa	aggcaaatct	tggaaagtgc	tttgttcgag	aatatgccta	420
ctgtagcagc	cattacactc	cgaccaagct	ccaaagcgat	gtgcgttatg	ctcagggcga	480
antact						486

(2) INFORMATION FOR SEQ ID NO:584

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 530 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...530

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:584

gcgcctacct	gctctacatt	tcacaggtag	gggtatatgg	cgacagacta	aagctcctat	60
gatcagtgcg	gacaatatga	cctgcccctc	catggggcgt	acgatgctct	gaccaagttg	120
caagccgaaa	agctggtaca	ggaatccgcc	tcgaatggac	gatctaccgc	ccgggtatta	180
tcctcggaca	cgattctcct	tgtgaacag	ctctgtatct	tgtatgccat	tggccacacg	240
cttcggaccg	tcctatcccg	cgatcttgcc	tctgcctgcg	tgaaggcata	cgatacaaag	300
cttctctttg	ggggcggaca	tacaatgtgg	gagggggcga	ggctgtcgca	tcggtttact	360
ccgactatat	ccgcgcctg	ttcaagttgc	tcgtctcggc	taccggaggt	ttccggacag	420
ggcgtttgcc	acacgcaatc	gtttggagga	tactttgcgc	atggggatgc	attggaagcc	480
atcctgcact	ccgtcgccat	acgatagaag	actacttcaa	ggagtttggc		530

(2) INFORMATION FOR SEQ ID NO:585

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 734 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...734

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:585

```

gctatgcctt gcttgatggt aggacagggt ctccttgctt ccgatgatgc acccagttca    60
tgtatttcaa accacatcat atccctgctt ggcaaaggaa gacgggttgt gtgtcatctg    120
tcgtgttgta tagattgata atctgctggc tatcggatgc aggggaatga atgattctac    180
tttcgtcttc ctgcggtaat ccgtatataa cgccgtccct cggccgtctt tcctatgtgg    240
tgccgtatag caattgcgta tcaacatagg caagccccgt aaaacaggag aagagaaagt    300
ccgtcgagcc agttctttca acgggtcgtt ctgtggcaat ttagttccaa caactgtttc    360
agttccgctt tgctgatgtg catacgcttg gcgggggctt cttctcatat tcgacttctt    420
ctaattgatt ggctcggata actcatggtc aacgggaagg taaaccaatc ggttcagcca    480
acaaaggcaa ggttggtctg cgatgctcgc aagtttttgt atcgtttcag ataaaccttt    540
attcccgtcc gaactcctcg gtgatgtcca agaaagcaat gtcgctcagc cttttgactc    600
caaaaactct cgaatataac tttggtaata tcttgaattc tgtatgtgga gtttgagcct    660
atttcggtta gctcttactg caagacttct cgtccctttt ctcccatctg gaanttaa    720
aatgggaac tacg                                     734

```

(2) INFORMATION FOR SEQ ID NO:586

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 492 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...492

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:586

```

gttcgaaaag cgttttaatt cctgtatggt gcaattgaaa tatgatagag agataggact    60
cgcgctcacc gatacgtttt aattcctgta tgggtgcaatg aaatctcccg ggttgggcag    120

```



```

cacggctttg aggaattggg ttttaatcct gtatgggtgca attgaaatcc gttacaaata 180
taggcttttc tgtttgatgt gaggagttaa cgaaaagggtg aaacccaaaa ttcagacatt 240
catagtgtcg atgtctgatt ctatgaaaaa ccaaggggtg tgacgactga tatatttatt 300
gattatcaat catttcaaag atcgccggag gttaatcatg gcaaaggctt gatgaatttg 360
ctcgagccga cgcttcaaaa gatagatagc ggagctgtat cgtgcttgta ttatagaaat 420
atatccgttg cagaacgctc ttgccaatta tttctttttc caaccaacgt tcttgtctgg 480
aagaaatatg tc 492

```

(2) INFORMATION FOR SEQ ID NO:587

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 363 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...363

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:587

```

gcccgtaaag tttccacttc tcttggcaca aggcacggaa ggaattgctt aggtttgaat 60
tccaaggctc tgccgcacaa tctcggtgaa ctgctcatgc atgtatcgca catctgagag 120
gagagtcttt cgatctttat cccgattccc taccggtggt atgatggatg ccagccggta 180
caatgacggc cggcncgagg acagatcaag agcanggcta agattcgcaa acttgacaa 240
tcgtatctca gcattaccga actgccctgt ggcaagacga cgtcttccct gatcantcca 300
ttctgaaagc caatgaaaag ggcangatca agatcaaach aatgatgata tgacggctgc 360
cga 363

```

(2) INFORMATION FOR SEQ ID NO:588

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 396 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...396

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:588

```

ggtgccaaagc gtccgaagcc cggacaggct cctgccgcta aaggtaagag taagagccgc   60
taagcggact cgctggcctc gatgagcgag gccggagacg ataaggacga atcacttccc   120
caatctacaa tcgcgctacg atcaaggcgc aaccaacaaa ttattttaaga accggttttg   180
agttcaattg gataggttaa acagggttga gtaaatgctc cggcgggagc gttgaagaca   240
aaaataaacg gcaaccaatc gacaaaaacg aaattttttg agacaatgag aaaacaaaac   300
ctaaaaaaag acagatcctg ccggatcccc tctatggtga tgtagggtga ctaagtctcg   360
taatcaccta atgtatgatg gaaagaagaa caagct                                396

```

(2) INFORMATION FOR SEQ ID NO:589

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 390 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...390

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:589

```

ggcgtttttaa caacagcagc gacaaagctt tgcgcggaata cattgccgac gctgtcgcat   60
ccttgcaagt gtaggcttgc atggcaatgt atttaagctc atacaggtag taagacgagc   120
gtactctttg tgcaaaagtg ggacgagagc tatgccacag agtagaggat tacaacatct   180
tctttgctac catgcagagc caagcaagga caatagtggc gacaagattt atcgnagcac   240
cactacgagg agggcgagaa tgttcctttg cttgacaccc acgggcatct tatcttaagc   300
acgatctttt caaccacgat ggactgaccg aagatggcat agcnaagcct ttgcagagtt   360
cgctaagaaa gagagactct ctttttcgcg                                390

```

(2) INFORMATION FOR SEQ ID NO:590

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 520 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature

(B) LOCATION 1...520

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:590

```

ggctcgcgga aatgaacttg gtcgtctata catccgggga atagcctcaa ccgctacact    60
ctatgacttc atcggcgagg agattgtcat ccgcggggtgc tctccttcga taatacggga    120
gataaatgcg ccatcaatca tcaccgaccg ggggaagggtt ttccctcggt ggtgataagt    180
gcgttgcgaa gaagaatttc atctctttcg tactattttc ttttgggaaa tcctttgaat    240
aagtgcagta gcgtagcttg atcacgcccg taaaagcttc accgaaaata gaaggttcac    300
tttcgacgtt cccaaaacac gattgacgaa agtgatgggt atcctttcag gcgaaatccg    360
agacaatagg ccgtgtatatt catctcgatt tgaaagcgta gcccttgaaa tgtaccgaat    420
caagatcaat ggtttcaaga attcgcggcg gtagcaaaca aatccggcag tcgtgtcgca    480
tatattcatc aggtcacgag acgcacatat ncngatgcgt                    520

```

(2) INFORMATION FOR SEQ ID NO:591

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 582 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...582

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:591

```

aatcctcgtg gaacggtcgg agcgggtctcg cttcaacgac ctcttccacg gagcggattt    60
atcttcgata tggaagactg ggctttotoc tcggagaaaa tcgactacgc gtactcaagc    120
actttgacct gaaaagcctc aaagggttcgg gctggaagag ctttcgatgg cagtaacggc    180
agccggagcc gtactgacta tctcgatctg acacagcacc atcagctaca acacatcaca    240
tcgctagccg actggatgaa aaccggtatg tacgcttgga taagttcacc gtccaagcct    300
tgaattgctt agcccgatga acgagggagg caagagtctg ctcacatcat cgaccatacg    360
ataacgccta tgggagcaag gcgtatacga catggatcgt attcccactc aaggaccctg    420
cacgcataca agcccgacag cagtgggtgga gtttttcttc cgacatcctg aagagcgcgc    480
catcattgcc aacatctgac agagataggg gacttggaac gtttggtgac gaaaggcgca    540
tgggacgcat ttctncgcga gaaatggtnc actacgtgtc gc                    582

```

(2) INFORMATION FOR SEQ ID NO:592

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 523 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...523

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:592

```

gagcgggtcat agtggcaata ccactcattc ttgcaaaaa attaagtgca atcgttcggc      60
ttgcaacaaa gcccggtaac tgccctccac acgcaggata cttgaccgcg ttttacggag      120
ccgccatccg atacataggg agtocaatca cggcttcgaa tcgttcgaag acacggcgag      180
ctacctccat gccggaatga tgccatcagc cttcattacc attgtggctt gcaagctcct      240
tccgatgggg gataatggca ttggaagaaa tgtctccatc ggcaatgtcc tctgaattgc      300
cagatcgatc aatttttcca aaagcatttc ttcattgagtc atacttaaaa gtgatgaggg      360
tattacggat gtttatttgg tatttccgcg tcgccggcaa ggggtgtaaga ggagtgcctg      420
cgataggctt ngctcgtatc ggatagtcct cccgatnatg ccctcctcta ctttctcggc      480
gagctatcgc ccccgaaacg tgagctgacc cactgtcagc agc                          523

```

(2) INFORMATION FOR SEQ ID NO:593

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 524 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...524

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:593

```

gcattcgtga agttggatgc atcgttaccg gtcgaagatg catacacoga tagtgctcgg      60
atgcataatt agcatcctgt ggcataccc agaaagtcaac ttacctcgt taggcaaatac      120
caatgccggt gttatcagat agttgtcggg gtaagaactc ctataccacc aagaccgaat      180
gactctgaat atacacacca ttgctattgt agccagcgat tccgggagca tttccaggct      240
tccagcatgc ccgtcacctg ctgcacgat ogtcttccat gaggcaggaa taccttttcg      300
aatgattcgg aaagtgtagt tgttcgggga ttcggatttg gatcgattt ggatttggat      360
tcgggggtacc attaggtgca tcccacttaa gcttactttc tggccgactg cactaccggt      420
caggttctgt acaggagcaa atcattggat ccttctaccg taacgtcttt acataccttc      480
ggagatacgc ggctgtgtac ttaacttcca cgcaatactc atga                          524

```

(2) INFORMATION FOR SEQ ID NO:594

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 493 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...493

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:594

```

ggcgagcttt ttcacgcaat tggatcangc tcttttactc tttccagtta aaactcatat      60
tcttttctaa atagttaggt ttgctatttc atgacataag gcatactcgc cggaaagcag      120
tcggcactgt ccggtcgccc gtaggggtgtt actattattt atgatcacat acctcggtca      180
gcacacccat agtactttcg ggtgcaagaa accgatattc aagccctctg ctcccttgcg      240
agcttttctg cgatcagett aatgccttta gagggcgcat cggccaatgc ttcgtggcat      300
cttccacaca aaaagcaatg tgatggatac cttctccacg ctttctatga atttggcaat      360
agggctttcg tcagaggctg gctccaacaa ttcagcttgg tctgocctac catcataaat      420
gcgggtacgca ccttttggtc ggtacttcct caatgctgta acacttgagt cccaatacat      480
tttcgtagta ggg                                     493

```

(2) INFORMATION FOR SEQ ID NO:595

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 391 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...391

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:595

```

gcacgggagt caatcatggc tctctgtccg aacgtatgct tacgcgctag gcgatacggc      60
tgaaggcatg gtacaaagct gcatggaata cctcgatgat gccacgaaca tgagttcgac      120
gatgtggtga tctcgatgaa agcatcgata ctttggtcat gacagcagct gtacgccttc      180
ttgtggaacg aatggagctg cagacatgca ctatccgctt cacatcggtg tcaccgaggc      240
tggcgtggtg aggacgggcg gatcaagagt gctgtcggca taggttcgct tttgctgatg      300
gcattggcga taccattcgt gtttactga gtgaggatcc ggacatgaga ttccggtagc      360
ccgcaaattg cttgcctata tagagaaacg t                                     391

```

(2) INFORMATION FOR SEQ ID NO:596

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 531 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...531
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:596

```

agcgcagaag ctatgccggt acggtatctt atctggctcc tcctttcatg aaacgcgcac      60
gaggggtcaa gtaagcgagt tcctcagctt gacggataat acctggagca ggacaacgat      120
gataaagccc tgtctctccg catcaagctt tggccgtgaa gaacggctac catcgggatc      180
tgaaactcga ctccatcttg acaaacctta tacacgtgag caaatcatct ctctttccga      240
ctttgcgaag aacttgctgt cagcaagatc ccgggtggta tgtacaagac aggcttatgt      300
tcccgaaga aaagatccgc tcttcctgta agcatattgc tacgatccta ttgcttatgc      360
tttgccgct atcgaccgtc agcgtggacg ctcacacagg agcagcaaga tagcgaacga      420
ttctttacca accactatcg tgtcctgccg aagcactggt agagcggtac cttggacgcn      480
aggcggtaga gtgaatgcag cattgactac gctgggtgta ctgtccagcg a              531

```

(2) INFORMATION FOR SEQ ID NO:597

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 743 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 (A) NAME/KEY: misc_feature
 (B) LOCATION 1...743
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:597

```

ccgacagcga ggatcgatca tggctgattt tcggcgggca taacttccca gaggagaaag      60
acaaggtggt ctctacgctt ggccaaggct tctatggcgc atccgtaaaag gtctcccatc      120
catgccttgg gtggctaccg gcctgactgc acgaacagta agcgtggcat tgagcagtaa      180
tactccttgc tctaccacgg caaaagactt cctccatcta tatgagccgg ctgtccggta      240
tcggctcgaat ctcttcgcag atattgcgta aactgggagg aatgggtata ccggcggcac      300
tgagaaaagg aaccttcggg cttgcccggt ttcatgatag ggacttgtcc aagaataacg      360
actttgacgc ggtcgaaagg gcaagtgtca aagcccga aaataaatcgg gccggggggg      420

```

aaatcggact	ctgccgata	ctcacgcac	aaagtcgggc	agcttttcga	aataaaattt	480
atcgaattct	cctgtaaaac	ctttttccat	cgggttcga	ttcgtacctc	tttcatgttt	540
tctgtttatg	taacgtgtat	attgtctttc	aaggacgggg	ctttacttga	aagccccac	600
ggtagctgtc	cggcggggtt	ctccgggtcaa	gtcatgggga	acaacgctat	gatagcagga	660
tcggctttcc	ctacgaatgg	ggcattggca	gaggatgata	gtcgtagcgg	aagttgtact	720
tctttttgat	caagtgtacc	cta				743

(2) INFORMATION FOR SEQ ID NO:598

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1001 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...1001

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:598

tccatagctt	cccaagcgca	agagggtgaa	gcgtgaagcc	gatgttgct	acaagccact	60
accaaagcca	gattggaaat	taccgtcggc	accaaagcaa	gagcaggata	ttgccccatg	120
aagccgcgtc	ggaagaggag	ccacttcccc	tgtctgacca	ggacgttgat	caggcaaaaa	180
cctgcggtcg	cgacgagacg	tagaacgtca	gcccgcgtcc	cggcatgatt	cggatccggc	240
tccgatgaca	aagacgatat	agagggcata	gcaaagcgcc	gagatggcga	ctatacaaag	300
cggtaagcc	ctacccgatc	gccccctccc	gtaaggccca	tcacaggccc	acgcctatca	360
gggcgatgaa	aatggccgtc	aatggcacgg	gcaaagtctt	tcccaaaaga	aaagaagcat	420
cagagccgtg	acgaacacgg	gtagaggaag	tggatgggtg	tggctacacc	gctggccata	480
tagccatagc	gtgaaagagg	aaaagtgcgg	tgccggcata	caagaagccc	agcaataaccg	540
cggccctata	tccgcacggc	tgactttgaa	gctgccgccc	gagaggcgtg	cagtataaccg	600
atggcgatgg	ctgcgaagaa	aaagcgatag	aagagaaaag	ctcgaacgaa	gcacccttag	660
ccgaaaccgg	cagcgtgaac	aggggggtgag	cccgaatgtg	gcggacgaca	gtataccgac	720
cgcaagaccg	tagagcgtga	agatgtcatg	aatgctgccg	taacgaatat	tgaggattga	780
tactataaata	ataaggtata	gcaggacgaa	accgtaagcc	gcacggagaa	gacgaaagac	840
gatatgcccg	gctcttcgac	ttccctcccc	ctcgtctgcc	ggctgcatcc	ggatagaggg	900
cggctcgtca	ctcagagtcc	tgtccgctgc	ccctcctctc	ttgtcggaga	ggaggcggcg	960
gcaggaact	gatcagttgt	catcgaggcg	aggaactccg	g		1001

(2) INFORMATION FOR SEQ ID NO:599

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1274 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...1274

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:599

```

tcgccttggc accttcaatg gaaatcgcg tgtttcatct cccctaccag ttctattccg      60
aagccttacc tgactgtgca tttggaattc cttcttggca tccttcatag agcatctcat      120
ccaagcgaat caccgaaggc atccatgatg caccagttcg gctactttgg atcgagttag      180
atcctcgggg ttcagtcgta ccattcgagc agagcggtgt atgccagca ccattcatag      240
tcgtatatcg gctatgaatt tccttcattc gctcattcac ctccgcaagg ctttgatctt      300
gccttctttg atcaaggagg caaggcggtg gatctgttgt tgtgagcgat catgccacag      360
atgtccaccc agctgccgtc tccctcattg tggtcggctt gagagcactc agcacctcct      420
catccgtacg gcaaggacaa tttcaaggcg tttgatgatg gaattgccga aaaacttggt      480
cagcccccac catagaacat cagccccctg tccaaggcag aagaacgtat gcgcatactc      540
gatagacata ggtttgtccc tcaactgccc gtatcttgcg tagcttttca gcttccgact      600
gccgcgcac atcttgccgg cagtgaagg actcaaggat tgaagttgat attgtccagc      660
aaatccggat ctttacgctt atctctgccc gccacttctt ggcgtcacga atcgccccca      720
cactgcgcag attgaacccg gtaccaaata cgattcgta cggctcctta tgatataaga      780
gaagggaagg ccgagctgtc aatatggtgt acgtgtcgac ccatcaccaa cgtaaaaggc      840
cctattcttg atggccaaag gatataagag tcgctcgtag tctcgagccg cgctccacga      900
tgccctgatg gatggggccc agcttgtaga gtgattgctc tggttagagc cgctgccggc      960
attgaggaaa gagtatagac ggcaatgagc aggctcgact tgtgcatcga cacggtatat     1020
ggccccgcaa gacggcacag gcctcgccgt tttcgccctg gcagttggca aagaaaagga     1080
atcatgtgca gagaaaaggt gccccaaatg agtaccctgc cctacaaaca gtgcgaaacg     1140
gtagcaccat ccgtaacgct gctgcccga cagagatgaa atcgcggcag acgacattgt     1200
agcctaccga cacggggggc tctttttgct attgatactg ccggtgcaga gatgcgaggc     1260
acccggtgat ctgc

```

(2) INFORMATION FOR SEQ ID NO:600

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 587 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...587

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:600

```

ggctccgtat aggttgtgat aacaccttca taattgcgaa gaaccacatt cgtggggact      60
gagatacaac atagttcggc attacaggta tcttaccaca cccccggag catctaccac      120
aaaggtagga acagcatagc ccgagggtgt ccgcgcaa atttcgataat ttcgattcct      180
ttagataccg gcgtgcgaaa tgacctattc caagcgaaag atcgcataca tatatatagt      240

```


aaggagcaca	cgcatcttta	ccagcaaata	taccaatctc	ttcatcacat	gtgtcaatca	300
ttgatttcca	cgcaataaaa	cccgtttggt	tacccaacgg	aatcccggca	ttggccattc	360
tttcacaagc	ctctactgct	tctttcggta	actcattcgg	gtggttgaag	tgagtgttca	420
gccacaccgg	atgatatttt	ttgagcatat	ccaccaattg	aggcgttata	cgctgaggaa	480
ggactaccgg	gtacgggttt	cctattacga	acaatattca	catgaggtat	tttgcgagc	540
gctttcatta	tggtattcca	agcgttctgt	cgctgacaag	gagggca		587

(2) INFORMATION FOR SEQ ID NO:601

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 672 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...672
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:601

gagaaagccc	ttgtcatgct	gcgagaaacc	atcggatcgg	agctttccca	ttgcatacat	60
gatacacattt	ctccctctat	gagacctaa	cagtggataa	gaatctgato	gtattcctac	120
ccctgttttt	cggacacagg	attggtgtac	ggaagccttg	ctaaggctga	ccatactoct	180
gatagcattt	tgttgcgcat	gagtgcagtc	tatctcttca	atgatatttg	cgatagagcg	240
atcgacgcct	gcaccccgtc	aaatcgagac	gccctattgc	cagcggagca	tggtatctct	300
caaagcttat	atactgatag	ctctgcttgt	ggttttggt	tgccagtgat	attgtcactc	360
cttgatttcc	cttttgccgt	ctatgccctg	attctatagt	gctttatctt	ctgctgaatc	420
ttttctatcc	actgaaaggc	aacacattcc	catcgtggat	gctttcctcg	tagctttcgg	480
ctttctgata	gattgtatgc	ggccggagca	gtgagcggag	taccatttcc	ccattgggtg	540
ctttgatgac	gctcttccca	tccttgcctg	tcgccttcgg	caagaggaag	aagacctgcg	600
tctgctgcag	gagacggctc	tttcatcgcg	tcctgtctca	aacattatac	ggatggattc	660
cctcaatgtc	ct					672

(2) INFORMATION FOR SEQ ID NO:602

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 541 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...541

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:602

```

tcttaaacct ctttccgagc aatcatctga ggggtaaata tgacagagaa taaggtatta      60
cggtgtgatt acatatatatt gtacttaaat aatccactca aaacggatga aaacgattgc      120
gaacgagtct tttcttcttg atacaaagtc cccgaacctc ctctgaggcg tcttccctgg      180
tatttgtctt acgtccgctt ttgcatgcgg atggatgcga gtcggtgtct tccacgcgga      240
tcgctgtgcc gtaggagtgg atgcttcgct cgtggccaag gatctctcct atgttcggtg      300
gatgggcgta cacgggtagg gtaccgggtg gcggacatgg tgggtgtgctg aacgactttc      360
tgggctttac gcaccaccac cgtgctttcc tctcgggggtg ggaagtctgg gtgctgcttt      420
gttgcaggac tcgggtttgc gcacttcggg ttggagattg ccgccgggtt cgatgtgaat      480
tccggatatt tggacactaa tatcaatggc attcccgttt accataagag cccggttgcg      540
a                                          541

```

(2) INFORMATION FOR SEQ ID NO:603

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 483 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...483

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:603

```

ggcgacgccc ccgaacagaa taccggcgga ggcgatacta ccaccacgaa cggagtggag      60
gcgacacgcc tgcactggac accttcggca ccgacatcct gccatggcgg cagcaggcaa      120
gctcgaccgg gtagtgggtc gggagcagag atcgaaaggg tgatacagat actcagccgg      180
cgcaaaaaga acaatcggtg ctcatcggcg aacccggtgt atggcaagag tgccatcggtg      240
gaaggctggc cgaacgcata gtgaacagga aggtgagccg tattcttttc gacagcggat      300
catcagcctc gattttggct cagatggtag ccggcaccaa atacgcggac agttcgaaga      360
gcggttgaaa gccgtgctcg atgagctgaa gagaatccgc agatcatnct cttcatcgac      420
gagatacata ccatcggtgg gagcaggctc tgcagccgga tcgatggata ccgtcaatat      480
gct                                          483

```

(2) INFORMATION FOR SEQ ID NO:604

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 512 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...512

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:604

tcttcttcat	cagggctgtc	acttctgtat	ctttctcaag	aaggaattct	acggagcttc	60
gatattctct	ccgttcacca	ttacctgtgc	cacttcgtac	cttcggcagg	gatgggatgt	120
attttaatac	gacggcctgc	cactaattgg	aaccgctggt	caggggctgc	ccatcggccg	180
ttagctttat	ctctcctttt	cgggctggat	gaccactacg	gaatatacag	agatagggtc	240
ataaacgctt	ccacttcatt	tgtagattct	ttgactacta	catgagtata	actgttttga	300
agggtagtcc	tgaaaaatcc	acataatctt	taagtccgaa	ataactaaat	ctgctatgga	360
aggctttggg	aagaatgtct	ctgaagcgag	cattctttgt	cgtactcata	gtagtaccag	420
aaatcgctac	gcccggcttt	gcaatatcca	ttccttcact	gtcgtattcg	tatatcaatt	480
caaattcggt	aaacctgtac	tggccgggga	tc			512

(2) INFORMATION FOR SEQ ID NO:605

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 666 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...666

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:605

cggccatagc	gtagggctgt	ccgtccgcgg	agtccgcgag	tgggtgcggt	ggctcgtcgg	60
aataccaatc	tggagatagc	actcaagaac	aagtccatgc	atacgatcgt	gccgaagcgc	120
ggctgcgttc	tttgaacag	ccggtttttt	ccacaacccc	ggcacgggag	cgaaagcgga	180
aaacgcacct	tcctctctcc	tgtcagtcca	caaacaaacg	aatagtcatg	cgaaagaaac	240
gtcccatccc	tactacaaag	tcagcaggcg	gaagttcagc	aaacgaaatt	ccggcgcaga	300
tattcgagaa	agaggagaag	aaacggacgg	cgacgagggc	tgagatcagc	ctgctcctcc	360
ttgtcgccct	cggtatctgg	atagccaagc	gaacagggct	tggttcgttt	ctccggccga	420
agtgcgctac	accgttcgcg	atcgaataga	ccaggctcac	cctgacaccg	ggtgaggatt	480
tccttaccca	aggacgggtc	gctggcggtg	cgacaccctg	ccgcaagact	cttggctggc	540
tatcgctctc	cggacgggag	ggatgcagat	accctgctga	tctcgctgcg	gccgagggaa	600
aagaagtcgt	cacccgtgcc	ggacgcaact	actattacac	gctaagataa	acggactcaa	660
gcccgg						666

(2) INFORMATION FOR SEQ ID NO:606

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 406 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...406

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:606

caaagagaaa	aggcgtgtag	atggtatgcc	tggcacacga	tctacacgcc	ccggagttat	60
tcgcttctga	gacgctcgag	tacttcgtcg	tacttggtccc	gatctcttcc	accatatctt	120
cggtgattcc	cttcattttc	ctacggtctt	ctggtagcga	ttcttggctt	cataatagcc	180
ttccaccacg	ctatccttac	tttgtcggct	gtactgttga	tgtcttcaac	gaagcgagta	240
cgctttcacg	atcagcgaaa	taagcagcgg	tagccnaat	agcaaggccc	actacagacc	300
gagagaaaac	tttccttgtg	agctcataaa	aaatcctcct	tacttattaa	atgctttgaa	360
tcaattttgt	cagaaaacca	attcacncga	atatgaatcg	tttcgt		406

(2) INFORMATION FOR SEQ ID NO:607

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 519 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...519

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:607

cgccgaattc	accaaacggt	tccaacgtat	caacgaagca	catgggctgg	tcagcaactc	60
atcccttatt	tcatatccag	ccaccggggc	tgtaccgaga	ggatatggcc	gaactggcga	120
tactgacaaa	aaagctcgac	ttcaaacgga	acagatacag	gactttactc	ctacacctat	180
gaccttagcg	acggaatgta	ctacaccggc	taccatcctt	atacgcttca	gcctgtatat	240
acagcatcaa	gaaagaagaa	aagatgcgcc	agcacatggt	tttcttctgg	tacaacggga	300
agaagccgac	aagatccgtc	gcgagctaca	ccgaatcgga	cgacggatct	cattgccaa	360
ctgttccgat	cgcactactt	cctctcgcaa	cgtcgccata	ctcctccgtc	caogcaacct	420
cgcaaaagca	aaagcaaaag	ccgccattct	tagcgacaag	gattacactt	aaagtcggaa	480

aatcttgacg aaggcgaagg tttttgagt ggaaaaagg

(2) INFORMATION FOR SEQ ID NO:608

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 664 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...664

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:608

agcagattat gccatcacgg cctctcactc ggagggtttc ggtctgaata tctggaggct	60
actgcttggtg gaaaaccggt tgtagccact gatttgcccc attcagagaa atctgcggca	120
caggctttca ggacaacgaa ttgttttttc tgtaggaaac caaaaagaat tggaggattg	180
catactaaaa agccttggtca tacgttcaac cctcaaaaag tctccgatat caggcatcat	240
ttctcgcgga aacaatgtct gtacaatatc agaactatta tacggagcta tcagtccact	300
aaaatgaatt caatgaagag tgcattgtcc gattattact gctcaatcgt actttataaa	360
agcaaaccgg atattattcg ggatgtcatt actccttttt ctctgatacg gtaactaaga	420
agaagcttat cctcatagac attctccgac tgacagtctt cgtgtcctcc aagaagaaag	480
accggaggat ttcagggtatt tctttaataa ccgcaatata ggattcggat cagctcacat	540
atcggtatta gagaggcagc tcgcttcaat ccttcttata attaattcta atcctgatgt	600
gcagtttggc cctgaagtgg tgccgacatt ggcttcaaca tggaccgaga atcctgatat	660
agga	664

(2) INFORMATION FOR SEQ ID NO:609

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 476 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...476

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:609

gggcatcacg	ccttccacgg	caacgaagat	gcatacgaga	agcatttcgt	gcgttggaag	60
aggcaaatag	cttgccaaat	cgaggaaatg	aaaagtcgtc	gtagagctta	aaatgatgcc	120
gatatacctt	actacataat	ctgtttgatt	tatttggtga	atgtgcagag	cgacacgatg	180
tccgaaat	gctgaaataa	tgtacctttg	ccgcgctgat	tattatcaaa	tagtgccgaa	240
cggttgattt	tcagtgcgtt	ttgtccgag	aggagcagcc	cagtgtccgt	gcgtaagctc	300
ctgatgcacc	ggccgaatcg	acagaaaaga	tgatcgttca	ccaattacta	acaacaaata	360
atacaagcag	tggatacttt	aagcttcaag	acattttctgc	gaacaaaagc	aactgttacg	420
aaggaatggg	tcattgtaga	tctgaaggac	agacacttgg	ccgtatgtgt	gccaaag	476

(2) INFORMATION FOR SEQ ID NO:610

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 775 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION 1...775

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:610

gggtaacgac	agcattcttc	accggatcga	tcatttgggc	aatagcctgt	tgaatgcttc	60
cagaggaacc	tgaggagcaa	aagcattcac	cgtctgattt	ccacctcaat	acccgggata	120
tagccgccat	cggtgaagta	ggtggagatt	cattggcata	agcattgttc	ttacgcttgt	180
ctctttcggt	gtattgttct	cgtatcgctt	gagcacattc	gngccgtgca	cgatccgtat	240
tcgccttggt	gaataccgaa	ctgaaggagg	ctttctatct	ctgccaccaa	tgcgtcacgc	300
ctttctccgc	ttcaccttca	cgaaccgagg	caacaaaatt	gaagcgtoct	tagtctgggt	360
gatgtacatg	aagttagaga	agaaagctcc	tgactgagga	aaggagcggt	aggcttggtg	420
gtaatctcgg	acagacgctc	atcacggctg	tagtgatcac	ctgtttcata	tagtcttcca	480
caagtccgaa	atcgatcctc	gcacttcttg	aggagtgggg	tcgctcttga	agctgatggg	540
agctgcgtgg	tagtagcctc	agcatcggta	gcaatggcta	cgataggcca	tcgttgctct	600
ctaccggcgt	atagatacgc	tctgctggat	tcacggggca	ggaacgtcct	tgaagagttc	660
tttgatcttg	ttctccacat	agtccaatcg	atatctccca	cgatcaccag	accttgccag	720
tcgggaacgat	accattctta	taatagttgc	gcagctcatc	atgcttgga	gttga	775

(2) INFORMATION FOR SEQ ID NO:611

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 833 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...833

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:611

```

ccgaagcttg ttcgtactcc cggaacntgc acacggggct tatttctgca gacgggaaag      60
acgtgcaggt gttcgaccgg gcagaagacc atcccgggcc gagtaccgat ttctttcggg      120
caccatcgcc cgcgaagccg gcgtcgtctg gtgcttctcc ctcttcgaga agcgcgctcc      180
cggtctttac cacaatcggc cgctcgtgctg gagcgggacg gcactatcgc agggaagtat      240
cgcaaattgca catccccgat gaccctgcct attacgaaaa gttctatttc acaccggcga      300
cttgggcttt acccccatcc cgacgtccgt cggatgcctc ggctactggt ttgctgggat      360
cagtgggtatc ccgaagcggc gcgactgatg gcatgcaggg tgccgatata ctcatattacc      420
ccacggccat cggtagccgag atacggacct gcctgccgag cagctccgcc aacgtcaggc      480
gtggcagatc tacagcgcgg acatgccgtg gccaacggta ttccccgtg gtggctggta      540
acaagggctg gccacgaggc agacccttca ggccgcaccg gtggcatccg ttctggggct      600
ccggattcgt agccggaccg caggggcgaac tgctggcgag ctgagcgcaa cggaagaggc      660
ggtggaggta gtggatatag atccctccga accgagcagg tgcgccgctg gtggccgtct      720
tccgggatcg gcggacgacg ctttctccgg ccttacggan cgtttccttc gcggctgacc      780
atcaggcgag aggggggatg gcgttcctgc cttccccct ccgacaagga gcc          833

```

(2) INFORMATION FOR SEQ ID NO:612

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 469 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:

(A) NAME/KEY: misc_feature

(B) LOCATION 1...469

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:612

```

tggttcgctg ccccaagtcg ttgtacgata gtcttcgcga agaggatagg cgcgtttccg      60
agtaccgctc gatattctgt ccgatgagga cgatacggcg gtacggaaga agacccttc      120
aaaaacacgc tggtcaggca tcaggatgct tcccctactt cgccttgoga tacttcgata      180
tgaagaaagt cttactccc tccgttcca tatagatttg ggcacctacc acttcgccat      240
atacagaaga acatcggcga gcagccggaa gaccgccatc tgacgcgcaa cctgacggct      300
tcggccgaat acaggatttc gccgaggagc atagaccoga agatggaagc gtttggtgcg      360
ggatttgac tacttcgag accggcganc aaccctata tcaccccaaa ccactccgca      420
ctatcatatc gagaaaagaa aattcgggct gaagttccnt gcccgaaa          469

```

(2) INFORMATION FOR SEQ ID NO:613

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 975 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: circular

- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...975

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:613

cagtggatgat	tttggcgctc	tcttcaagtt	gctccatttg	ccgatggcca	tgagatgctt	60
ttcgtgggat	gatcacagaa	ttctgggtgt	tttttatccc	ggatttgaaa	aaccgcgaat	120
ggaatatcac	tggaagagg	tcttcccgaa	ctggactcga	agaatccgat	ggaccgtcgg	180
gagatggagc	agcgtcggag	tatcttcgtg	aaaaggccaa	agaagcagct	gcatacgagg	240
aaagacatct	tctgtgcgcc	ttgcctctgc	ctctttgggt	acgcaaccgc	aagacagccc	300
aagcctgcc	ctcctttcca	gtcccaactg	accggaatac	tgcggaagag	cagatccaac	360
gcctgagcga	aggcatagac	aaactggctg	aacaggcgaa	cagcttgccc	gtatcggccg	420
gactgcagcc	gccatgacgg	aagctacgag	cagatgcaag	cggatcagga	aggcctgcgt	480
ctcaattcgc	atcgtatatc	cagcagatgg	aaagcctcag	tcgcaatata	tccggcctga	540
taccatatac	gaaatacagc	tcaagggcat	cagctcccag	atcgacacat	cgatcgcata	600
aaccgcggat	tggtcatat	ccgagatatg	tatgacatag	tgtcatcgac	agttcttcat	660
tccgcaacga	aaacgagcgt	atggcagcca	actgacacaa	ctcaacgagg	tgtatgctcg	720
cttgetccaa	gccttacaac	gaatgtaggt	cntacccggt	atgcccggn	attttggtgc	780
ttctatcctt	catcatccgg	cagctcacc	ttataagcca	tggcagtagg	ttcaatggga	840
atgccaatag	gcaaaagatg	atcaacctga	tgtacctcgt	gtcatcgcca	tgatggcttt	900
gaacgtatcg	agtgcgttac	tggatgggtt	cacaaagtgg	ataagagctt	acctcttcat	960
cgacggtccg	ataag					975

(2) INFORMATION FOR SEQ ID NO:614

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 505 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: DNA (genomic)
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: UNKNOWN
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
- (ix) FEATURE:
 - (A) NAME/KEY: misc_feature
 - (B) LOCATION 1...505

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:614